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ABSTRACT

This document consists of the eight issues of the UNESCO-UNEP Environmental Education Newsletter published in 1991 and 1992. The lead article in the March 1991 issue, "From Awareness to Action via Nonformal Environmental Education," discusses the different methods to translate and transmit environmental education concepts to citizens in simple and understandable terms. Particularly targeted by this effort are women of the developing world. Methods cited include use of television and radio, popular theater, group discussions, and nature museums. The lead article in the June 1991 issue, "A Universal Environmental Ethic: The Ultimate Goal of Environmental Education," proposes that the development of an environmental ethic that asks individuals to think globally and act locally should draw from environmental cultures. The article discusses the development of environmental ethics in several religious cultures. The lead article in the September 1991 issue, "Environmental Education for University Students," discusses the development of courses that provide intensive environmental education and training for students in two special groups: (1) student scientists, technologists and other future experts dealing directly with environmental concerns; and (2) students of professions whose future work will have an influence and impact on environmental management. The lead article in the December 1991 issue, "Incorporating Environmental Education into Industrial Education," discusses an environmental education curriculum for Industrial Schools. The lead article in the September 1992 issue, "Environment or Development--A False Alternative?", discusses recent advocacy of sustainable development. Topics discussed include: (1) Models to illustrate that sustainable development is the intersection of social, economic and environmental goals; (2) principles for sustainable development supported by the International Chamber of Commerce; (3) sustainable development in the humid tropics; and (4) environmental education for women. The lead article in the December 1992 issue discusses Biodiversity, the necessity to protect endangered plant and animal species, and how to infuse biodiversity in the curriculum through environmental education. (MDH)

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

Vol. XVI, No. 1, March 1991

From Awareness to Action via Nonformal Environmental Education

Successful management of the environment, achievement of sustainable, environmentally-sound development, depend upon cooperation among governmental bodies, industry and concerned, *informed* citizens acting individually, collectively and through their elected officials and governmental agencies. Intelligent and effective citizen participation in environmental cares requires public awareness deepened by knowledge from the sciences, social sciences and humanities. It further requires the development of attitudes and practical skills which aid people to live in a manner which enhances environmental quality and reduces environmental degradation.

One of the most urgent problems today in environmental education (EE) is how to translate *and transmit* in simple, understandable terms such vital concepts as interdependence, limitation of unrenewable resources, human population growth and energy flow. This becomes of major significance when one recalls a cardinal fact confronting everyone concerned about education: *the vast majority of the world's population, youth as well as adult, is outside the formal school system and educational process.* Particularly to be targeted are women of the developing world: their role is critical, their contact with the environment most direct, through the family and in the fields, from fuel, consumer attitudes to cultivation of the soil.

In other words, to arrive at an environmentally-informed, intelligent and effective citizenry — the indispensable factor — development of nonformal (out-of-school) environmental education is a must along with formal EE.

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The planning, organization and methodology of nonformal EE has varied enormously from one country to another. In Nepal, for example, Radio Nepal has been broadcasting a weekly programme on ecology with an emphasis on the preservation of forests, a particular problem of the country. The Sahel-Vert activity, conducted in Senegal, was a practical exercise in out-of-school EE involving nearly two thousand youth in a tree-planting programme covering almost 700 hectares of the Sahel Desert.

Many nations have incorporated special rooms for EE in their nature museums and other educational facilities, in their nature gardens, parks and reserves, etc., (See *Connect*, December 1986, "Micro-Environments for Environmental Education. ")

Many programmes are government-inspired and -controlled, others are sponsored by nongovernmental organizations and some are a combination of both.

Nonformal environmental education may be broadly classified as participatory or nonparticipatory. The latter's target group members are largely "passive receivers" of such media messages as TV-radio programmes, newpaper and other press articles, talks, etc., as well as, to a greater or lesser degree, in such activities as visits to nature museums, zoos, aquaria, etc. As for the mass media, their environment role should not be to alarm the public, but rather to alert and educate it with scientifically and pedagogically sound messages. In this connection, two recommendations of an EE meeting of ASEAN countries (Indonesia, Malaysia, Philippines, Singapore and Thailand) are to be cited: (1) "The mass media should be encouraged to *educate* and not merely to disseminate information of environmental concern." (2) "Although the mass media have proved to be an effective instrument for public EE, personal contact, too, must be augmented for the substantive transfer of environmental education, taking into account the culture and educational levels of the target group." (See *Connect*, June 1982.) This augmentation of nonparticipatory EE programmes of the mass media with structured, educative and *interactive* follow-up is most important if they are to be effective.

Class or group discussion is one form of follow-up as well as a general form of education, inside or outside the school. It is obviously more participatory than the usual talk or lecture and therefore a more effective teaching/learning strategy. Many adults learn best in a social context and participation in class discussion can develop self-confidence. Ideally, for thorough discussions the number of participants should not exceed fifteen.

The use of radio in developing environmental awareness has been a characteristic of the medium since its origin. In fact, the portable, transistorized radio has arguably become the most widespread and commonly used invention of the 20th century (even as compared, say, to the telephone). However, as mentioned, the major problem remains: how to ensure that the environmental message reaches and *activates* its listeners. Many strategies have been devised to achieve this. They include the use of a "forum approach," as in Ghana and Benin, and of a specific instructional way, as in Tanzania and Nigeria. In the latter countries, listeners were organized into groups with the aim of teaching a variety of cognitive skills as well as work skills, which could lead to a heightened quality of life. The environmental radio programmes were augmented by written materials and a local teacher or extension worker provided an element of interpersonal communication.

In the "forum approach," emphasis is on group discussion and listeners' views and questions form the basis of much of the programmes. This strategy of using listening/discussion groups also includes the use of written materials and the participation of a teacher, monitor or extension worker to direct activities. The use of environmental radio cassettes, wherever existent, is eminently advisable as well, and where not existent, their production in terms of specific local or national environmental problems or issues. Wherever — or whenever — small, portable TV units, complete with environmental video cassettes, are — or will be — widely and locally available, the same strategies are applicable.

Among the most participatory forms of nonformal EE is undoubtedly *problem solving*, one of the key aspects of EE (along with *interdisciplinarity*). It provides a basis for relevant and meaningful curricula and helps individuals develop critical thinking skills and a much improved self image. People begin to realize that they can really become agents for change for the benefit of themselves and their society. Admittedly problem solving is a difficult process for both teacher and learner. However, in the process learners become encouraged to deal with controversial issues and develop interpersonal communication skills and values which are so important for dealing with complex issues. Similarly teachers and leaders who are not well versed in the art of problem solving become aware of how controversy may spark learning when handled well. (See EE Series No. 15, A *Problem-Solving Approach to Environmental Education*, which is available to institutions on request to *Connect*, address on the last page; see also this newsletter's June 1983 issue.)

During the last decade there has been an increasing use of popular theater as part of a two-way communication process in EE. The purpose of such programmes is not simply to impart information in an entertaining way, but also to develop a critical awareness and generate a commitment to collective environmental activities. An example of this new approach is illustrated by the Laedza Batanani ("Wake up — let's get together and work together") festivals in Botswana. The festival is a mixture of socio-drama and group discussion and provides a forum for the expression of feelings and an analysis of the major environmental problems faced by the community involved. Each year local community leaders and extension workers meet in a workshop to choose the issues to be examined and accordingly plan the festival.

The methodology and techniques of nonformal education are wide and varied, offering vast opportunities for the spread of EE worldwide. For exam-

ple, *basic literacy for all* has become a project of international priority. A great many countries are now pledged to coping with their own problem of illiteracy by mounting adult, functional literacy projects. Such projects are fertile ground for introducing environmental issues of immediate concern and relevance to the participants. Indeed the result might be — and has been — called **environmental literacy for all** (*Connect*, June 1989). For example, consideration of how to improve the quality of life of a village by such amenities as a constant supply of unpolluted water and adequate sanitation facilities, or how to improve the local economy by increased agricultural yields and better marketing, are clearly ideal topics for an adult literacy class. But there is a need to introduce a more penetrating *EE view* to such topics, such as excessive use of pesticides and inorganic fertilizers may give short-term crop yields, *but what of the long-term health and environmental costs?*

As for the EE training of teachers in the nonformal sector, it is essential to identify the needs and requirements of the specific target groups and plan the appropriate training programmes accordingly. For example, any programme concerned with teaching EE to young school drop-outs should illustrate how features of the local environment can be used to develop the basic skills of literacy and numeracy which will, almost certainly, be lacking in the pupils. Similarly, training programmes for those teachers of unemployed young adults should contain a large component of outside project work in which a variety of jobs can be experienced. For adults, methods and materials must be relevant and truly meaningful at *their* nature level; the particular needs and potential of women, where appropriate, should be specially considered.

The desired competencies of EE teachers in general have been previously discussed in these pages (*Connect*, March 1990) as including: (1) foundational competencies in professional education; and (2) competencies in EE content. The latter, in turn, include: ecological foundations, conceptual awareness, investigation and evaluation, and environmental action skills. These competencies apply no less to EE teachers in the nonformal sector of education and their training programmes should similarly include these fundamentals.

(The article above is largely based on a document published in the Unesco-UNEP Environmental Education Series (No. 23), which is titled *Guidelines for the Development of Nonformal Environmental Education*. It is available in English or French to institutions by writing to *Connect*, address on the last page.)

EE Training Course for Science Teachers and Supervisors in the ASEAN Countries

A regional training course for science teachers and supervisors on environmental education in the ASEAN countries, organized by Unesco and the University of the Philippines in association with UNEP, UNDP and the ASEAN Committee on Science and Technology, was held in Quezon City, Philippines, 24 July — 11 August 1989. The six ASEAN countries were: Brunei-Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand. Follow-up national EE training workshops are planned for these countries.

The objective of the training course was to inculcate among teacher educators, secondary-school science teachers, curriculum developers and supervisors these EE dimensions: an increased awareness and sensitivity to the environment and its problems; an understanding of fundamental environmental concepts and their science content; competence in the supervision/teaching of the environmental dimension of science in secondary schools; skills in the development of lesson plans and the preparation of teaching aids for environmentally-oriented science in secondary schools; and skills in the use of alternative strategies for planning and development of EE curricula.

The twenty-two participants comprized senior science teachers, teacher educators, supervisors and curriculum developers. They engaged in a variety of activities, including lecture-discussions, field and laboratory work, demonstration teaching, development of exemplary instructional materials and teaching aids, and case-study analyses. There were presentations of six country reports on the environmental problems and status of EE in each country (see below). The presentations included slides, posters, syllabuses, textbooks, modules, videotapes and photographs.

Outputs included an EE framework for secondary schools, lesson plans and teaching aids, instruments for monitoring and supervision of environmentally-oriented classes and a national EE programme for each participating country. There were field trips as well. A summary of the country reports presented follows.

Brunei-Darussalam

Environmental problems: solid waste, pollution, land use, waste water and sewage, wildlife conservation.

Environmental education: an environmental dimension has been incorporated into secondary-school subjects, such as integrated science, chemistry, biology, physics, combined science, human and social biology, and geography. At the university there are environmental components, such as environmen-

tal systems, ecology, and geomorphology and climatology for future teachers. Nongovernment organizations directly involved in environmental matters include the Brunei Association of Science Education and the Brunei Chemical Society; the former has published EE materials and organized science-project competitions in schools relating to environmental concerns.

Indonesia

Environmental problems: diminishing agricultural land, deforestation, soil erosion, water shortage and pollution, solid waste and air pollution.

Environmental education: the Environmental Management Act (No. 4), in support of sustainable development, requires the government to cultivate and develop the public's awareness of its responsibility in environmental management, largely through dissemination of information and education and research concerning the environment.

At the secondary level, population and environmental themes are integrated into subjects such as science, biology, social science, geography, economics and the study of Pancasila Morals. In teacher-training institutes, population and environmental studies have their own place in the curriculum. In several universities introductory environmental science is an obligatory course.

Malaysia

Environmental problems: deforestation, water shortage and pollution, excessive use of agrochemicals, air and noise pollution, depletion of fishing grounds, land use.

Environmental education: there is a new emphasis on EE, thanks to the recent Integrated Secondary School Curriculum which incorporates "Man and Nature" into science and geography. The new science curriculum, for instance, concentrates on these themes: human beings and other living things; earth resources and their management; energy for living; human beings and harmony in the environment. The training of future teachers of science, geography and science-based subjects increasingly includes environmental awareness and competency. At the tertiary level, a number of universities now include environmental studies and work closely with the Ministry of Science, Technology and the Environment in conducting joint environmental research projects.

Philippines

Environmental problems: industrial pollution, health, degradation of forests, decimation of coral reefs, water pollution and above all poverty and its results.

Environmental education: environmental themes are usually part of the science curricula at the secondary-school level, but EE is also integrated into social studies, health, communication and the practical arts. Teacher-training programmes contain an environmental component, the importance of the latter depending on the subject eventually to be taught, e.g., geography, the natural or social sciences, etc. The University of the Philippines Institute for Science and Mathematics Education Develoment conducts short-term EE courses for science teachers and produces EE curriculum materials for elementary and high school pupils. At the tertiary level the current EE approach is to integrate environmentalism into all disciplines.

Singapore

Environmental problems: improperly treated sewage, solid wastes, drainage problems, pollution of surface water, waste disposal, oil pollution.

Environmental education: at the primary level, science teaching is focused on the study of the environment and innovative strategies in this regard are used in the social studies programme. The primary-science theme of people interacting with their environment is continued at the lower-secondary level, which focuses on pupils using the concepts and skills they have acquired at the primary level to interact with and inquire further into their environment. Themes pursued are: habitat, simple concepts of population, community and ecosystem; energy transfer process in the ecosystem; nutrient cycles in the ecosystem; and people's impact on the ecosystem. In the last topic the pupils' attention is drawn to the effects of overpopulation, urbanization, industrialization, pollution and depletion of natural resources in an ecosystem.

The lower-secondary geography curriculum also includes studies of the environment, such as exploitation and poor management of the land, methods of conservation and environmental pollution. Through fieldwork, group discussions, project work and practical exercises in the classroom, the pupils develop a greater understanding of the effect of urbanism on the natural environment. They can, for example, observe at first hand that clean living and proper working habits are essential to the prevention of urban pollution.

The science and geography courses at the upper-secondary and pre-university levels contain environmental content aimed at: pupils' understanding of fundamental concepts and principles; their developing relevant abilities, useful skills and attitudes, such as inquiry skills and initiative; and the stimulation of interest in and care for the environment. For teachers, in-service EE courses have been organized and implemented by various governmental agencies while other agencies additionally conduct EE workshops and field trips. The National University of Singapore offers both compulsory and selective environmental courses from environmental management to environmental physiology and economics. The Singapore Science Centre engages in nonformal EE through its Ecogarden, mini rubber plantation, laboratory classes and science demonstrations, journals, slide series, guidebooks and various extracurricular activities in its Science Camps and during Ecoweek and Discovery Week.

Thailand

Environmental problems: depletion and deterioration of natural resources: deforestation; soil degradation; shortage of surface water; deterioration of coastal resources; water, soil, air and noise pollution; solid waste and toxic substances.

Environmental education: at the lower secondary level, EE is integrated into the science and social studies; it is also offered as a separate course for a social studies elective course. The upper-secondary level treats EE as a separate course in the elective social studies; it is also integrated into all science courses. In teacher-training colleges, EE is offered as a separate course; in universities it is either integrated into science and the social sciences or given as a separate course or courses.

Thailand's Education Ministry has established a comprehensive EE workplan as a guideline for relevant curricula at all levels in both formal and nonformal education. Additionally, research and studies of information management systems are encouraged as well as a greater degree of cooperation nationally and internationally in the field of EE. Efforts are also made to stimulate environmental conservation and improvement. The Ministry's Institute for the Promotion of Teaching Science and Technology is actively engaged in producing all forms of EE teaching/learning materials. Pranakhorn Teachers' College is similarly involved.

(A 69-page report of the ASEAN training course, described above, is available in English to institutions by writing to: Unesco Principal Regional Office for Asia and the Pacific, G.P.O. Box 967, Bangkok 10110, Thailand. A report on the EE training course for ASEAN countries is also available in English from the same Unesco Office.)

Environmental Education in Australia

Support for environmental education from the national as well as the state governments of Australia is particularly strong. Since 1987, for instance, four state governments have issued EE policies. The most recent was released in September 1990 by the Victorian (State) Ministry of Education, a policy supplemented by a broad network of Extension Educative Services, such as EE teachers at the State Zoo as well as with government resource-management agencies. These teachers also prepare curriculum materials, advise schools and conduct students on field excursions. (For more on the state of Victoria, see below.)

The states of Queensland and New South Wales help implement their EE policies with Field Study Centres. Here students stay for week-long studies, including experiential and investigative EE activities. The state of South Australia has funded twenty-six schools to carry out an intensive land rehabilitation programme, Landcare, supported with EE curriculum materials and consultant advisors. There are eight state ministries or departments responsible for education. Coordinated by the national government, they are currently cooperating in an exercise to establish exactly how they go about EE with the aim of sharing their experiences and best results. The first phase of this activity, namely, detailing current curricula, is to be completed by mid-summer of this year.

Governmental EE in Australia is complemented by the substantial activities of a nongovernment organization, the Australian Association of Environmental Education (AAEE), and its state chapters and affiliates. Membership consists of primary, secondary and tertiary teachers, government personnel in resources management and conservation, and community lead ers concerned about the care and preservation of the environment. The AAEE hosted an international EE conference in Adelaide, south Australia, in September 1990. Keynote speakers from UNEP, UNCED Secretariat, Children's Alliance for the Environment and their Australian counterparts linked the Australian scene in school, university and nonformal EE with international trends. Its next annual conference will be in Perth, in 1992. The organization also publishes a quarterly newsletter, *ozEEnews*, and an annual journal. The state chapters are additionally active in producing curriculum materials and in conducting seminars and other EE development activities. (The November 1990 issue of *ozEEnews* contains a long, witty account of the Adelaide conference. Address: Noel and Annette Gough, Editors, *ozEEnews*, 21 Brenbeal Street, Balwyn Vic 3103, Australia.)

State of Victoria

In 1987 the Victorian Government issued the important statement, *Protecting the Environment: a Conservation Strategy for Victoria*, which underlined the fundamental role of EE in aiding the community, both local and global, to understand the necessity for protecting and conserving the environment. Together with Victoria's *Economic Strategy* and its *Social Justice Strategy*, the *Conservation Strategy* stands as a framework designed to achieve prosperity and enhance the quality of life for all Victorians.

The objectives of the *Conservation Strategy* are described as aiming to: maintain essential ecological processes and life-support systems; preserve genetic diversity; ensure the sustainable use of renewable resources; ensure the wise use of nonrenewable re-

sources; and protect natural areas and ecosystems for the nonmaterial needs of society.

The *Strategy* endorses EE as a priority for achieving the government objectives, which are to: develop community awareness and involvement in environmental matters by increasing EE opportunities for the whole community; promote and strengthen interdisciplinary EE programmes in schools and tertiary institutions; promote a conservation ethic and encourage the adoption of environmentally-responsible attitudes and lifestyles; and ensure adequate opportunities for community involvement and resources management decision-making.

Directions and guidelines for curriculum at school level are found in *Curriculum Development and Planning in Victoria*, Ministerial Paper No. 6, which requires that all students should have access to a comprehensive curriculum including studies of: the international community; resource use; the relationship between the physical environment, culture and society; the social and environmental impact of the applications of science and technology; and the need for responsible maintenance of environments.

The *Environmental Education Policy* released by Victoria's Ministry of Education in 1990, clearly states that "Environmental education is an essential part of a comprehensive school curriculum and, when it occurs as an entire school approach, it provides a powerful and meaningful form of education. It combines theory and practice in a way that is relevant to all members of the school community."

It is further stated that "a school environmental education policy should aim at providing learning experiences that maintain and improve the quality of the school and its surroundings. These learning experiences should progressively involve the school in conservation and environmental matters on a local, regional, national and global scale. The policy should provide a consistent and supportive climate for environmental education in the school. It should encourage learning through experience, active problem solving and decision making that is concerned with real problems and relevant issues."

The interdisciplinary, or "cross-curriculum," approach taken by Victoria's EE policy includes such teaching and learning experiences as:

- activities in the arts, such as painting, photography, drama and dance — these activities can interpret and/or celebrate the environment, convey attitudes and show options for environmental management;
- studies of the local environment, such as identifying resources and species, counting populations, mapping the distribution of resources, species and populations, and measuring the composition of air, water and soil in the locality, developing and preserving local resources, sites, landscapes and species, restoring habitats, landscapes, populations, historic sites and buildings and any other significant aspect of the local environment affected by human activity;
- activities in the humanities, such as investigating the functions and history of local sites and buildings or writing to express feelings about the environment.

(The section above on EE policy in Victoria is based upon its Ministry of Education's *Environmental Education Policy*, a 24-page brochure. For its availability as well as for more information, write: Statewide School Support and Production Centre, Ministry of Education, Level 1, Rialto, GPO Box 4367, Melbourne 3001, Australia.)

Incorporation of Environmental Education into General University Teaching — Africa and the Arab States

An Interregional Training Seminar on Incorporation of Environmental Education into General University Education was held in Cairo, Egypt, 7-12 July 1990. The training seminar was organized by the Institute of Environmental Studies and Research of Egypt's Ain-Shams University in the framework and with the support of the Unesco-UNEP International EE Programme. The six participants and twelve observers who attended the seminar — the third of three such seminars held at Ain-Shams University since 1988 — came from Iraq, Kenya, Kuwait, Sudan, Syria and the host country, Egypt.

The training seminar was organized around: (1) panels on the incorporation of EE into (a) medical education; (b) biological and agricultural education; (c) physics and engineering education; and (d) humanities and pedagogical education; (2) the presentation of country reports by participants; and (3) group preparation of relevant units or courses and individual development of national strategies.

Recommendations of the first panel included: integration of EE into the various departments of the Faculty of Medicine under the guidance of the Departments of Community, Environmental and Occupational Medicine; more emphasis in teaching medical students the people/environment relationship and the impacts of radiation, radioactivity, pesticides, etc.; more environmental research and improvement of laboratories concerned with it. The second panel decried the overspecialization now practised in agricultural education and the lagging behind in the study of environmental changes. The third panel examined current physics and engineering education and the environmental components to be added: interactions between the biosphere, "technosphere and sociosphere," appropriate "clean" technology,

environmental field work, etc. The fourth panel proceeded similarly with components for geography, rural, urban and industrial sociology, social psychology and service, social research and the teaching of future teachers.

Country reports on the status and future of EE in general university education were accompanied by suggested strategies at the national level for each of the six countries reported upon. Four working groups presented schematic outlines for courses on "Environmental Aspects of New and Renewable Energy Utilization," "Management of Refuse Disposal," "Vector-Borne Diseases" and a general course on "The Environment."

(A Final Report of the above training seminar is under preparation and will shortly be available in English and obtainable by writing to *Connect*, address on last page. The Final Report will contain details of the proceedings, the panel discussions, the country reports, the proposed courses and the principal speeches.)

National Training Workshop in Environmental Education — Benin

A national training workshop in environmental education for educators was held in Porto-Novo, Benin, 3-8 September 1990. The workshop was organized in the framework of the Unesco-UNEP International EE Programme. Participants were primarily those responsible for the preparation of teachers at the primary and secondary levels, particularly in geography and biology and other natural sciences, as well as a number of professors in these disciplines and school supervisors.

The objectives of the training workshop were: (1) to develop awareness of the environment and its problems, notably in Benin; (2) to share knowledge and experiences in environmental education, its principles, goals and methods; and (3) to develop a national strategy for the promotion of EE in Benin. The workshop was organized around plenary sessions (presentations followed by discussion) and two working groups, the first on the teaching of geography, the second on that of biology, both in terms of the incorporation of an environmental dimension.

There were seven presentations by specialists, which covered the essentials of EE; primary and secondary education nationally and the current state of EE at these levels; Unesco's Man and the Biosphere (MAB) Programme; people, climate and the degradation of the environment; the destruction and the preservation of natural resources; teaching/learning methodologies in EE; and national strategies for the educational innovation required by the introduction of environmental education into school programmes. The two working groups developed follow-up projects, and strategies for a five-year action plan, beginning with the close of the national training workshop.

(A full report of the Benin workshop, including presentations, workshop results, etc., is available in French by writing to: Commission nationale beninoise pour l'Unesco, Porto-Nuovo, Benin.)

EE News and Publications

The Environment: Six Years of Programme and Research Activities, 1985-June 1990, is a compilation on 100 microfiches of the main books, articles, working papers and conference documents produced by **Unesco**, or under its auspices, on the theme of the environment. Packed in a plastic card index box and complete with a 137-page index in book form, the compilation is available for 2,600 FF by writing to: Unesco Press, Sales Division, 7 place de Fontenoy, 75700 Paris, France. Also available is MAB Digest (No. 6), *Debt-for-Nature Exchanges and Biosphere Reserves: Experience and Potential*, which describes innovative methods for project financing in less developed countries by means of the "debt-exchange" instrument. Write MAB, Unesco, address as directly above.

Action on the Environment: the role of the United Nations is an illustrated, folio-size brochure recently published by the International Institute for Environment and Development in cooperation with the United Nations Environment Programme **(UNEP)**. The last set of issues (Nos. 67-71) of *Outreach*, an EE network periodical, is devoted to "crops," "how food spoils," "income from tree planting," etc. Issue No. 4 (1990) of *Our Planet*, UNEP's magazine, features an article on "Cleaner Production, or cutting waste by design." *Information Green Paper*, No. 1, "Global Environment Justice," by Dr. Mostafa K. Tolba, is the first of a series of *Green Papers* to be published by UNEP which aims to highlight priority environmental issues. For each or all of the four publications mentioned, write: Information and Public Affairs, UNEP, P.O. Box 30552, Nairobi, Kenya.

Environment and the World of Work is a 106-page booklet published by the International Labour Office **(ILO)** which covers environment, development and the role of ILO in these regards. Module 2 of ILO's environmental training course for employers' organizations, *Environmental Planning and Management*, is also available by writing to: ILO Publications, International Labour Office, CH-1211 Geneva 22, Switzerland. ◆ *Children and the Environment*, a 73-page brochure, has been published jointly by UNEP and the United Nations Children's Fund **(Unicef)**. Write either to UNEP, address above, or to Unicef, Palais des Nations, CH-1211 Geneva 10, Switzerland. Maggie Black's *From Handpumps to Health*, the evolution of water and sanitation programmes in

Bangladesh, India and Nigeria, is also available from Unicef. ◆ Issue No. 4, 1989, of *INTIB NET*, a newsletter of the United Nations Industrial Development Organization **(UNIDO)**, describes the environment programme which has been launched by the organization. Write: UNIDO, P.O. Box 300, A-1400 Vienna, Austria. ◆ *Environmental Status Report — Sub-Saharan Africa, 1990* has been issued by the Environment Division, Technical Department, of the **World Bank** for the African region. It covers the Bank's environmental activities in that region. A worldwide report of these activities has also been issued, entitled *The World Bank and the Environment*. For both, write: The World Bank, 1818 H Street, N.W., Washington, D.C., 20433, U.S.

The Community Health Worker, available in English, French and Spanish, has been republished with a new section on AIDS, by the World Health Organization **(WHO)**. The 467-page book is divided into three parts: Working guide, Guidelines for training community health workers and Guidelines for adaptation. A catalogue of the organization's publications is also available. Special note should be made of the Inventory of Audiovisual Materials in the environmental and occupational health field, recently issued by the Environmental Epidemiology Network under the aegis of WHO's Global Networks project to strengthen education, training and research on environmental health hazards. Write: Office of Publications, WHO, CH-1211 Geneva 27, Switzerland. ◆ A number of illustrated brochures of special EE interest have been published recently by the World Meteorological Organization **(WMO)**: *The Atmosphere of the Living Planet, Earth: The Role of the WMO in the international decade for Natural Disaster Reduction; WMO and Climate Change;* and *WMO and Global Warming*. The organization also issues Fact Sheets. Write: Public Information Office, WMO, 41 Avenue Giuseppe-Motta, P.O. Box 2300, CH-1211 Geneva 2, Switzerland.

The Organization for Economic Cooperation and Development **(OECD)** has just published two new reports: *The State of the Environment 1991* and a supplementary volume, *Environmental Indicators: a Preliminary Set*. The first is almost 300 pages long, presenting "a mixed picture: of the progress achieved among highly industrialized member countries as well as the problems remaining or emerging; global atmospheric issues, wastewater treatment, intense noise levels, toxic substances, deforestation, solid waste disposal, etc. The report identifies two key new challenges for the 1990s: integration of environmental and economic decision making and effective translation of international agreements into environmental realities. The OECD *Observer*, February/March 1991, contains a summary of both reports. The organization has also just published *Environmental Policies for Cities in the 1990s*, 71 pages, which examines and proposes urban environmental improvement policies. Write: Publications, OECD, 2 rue Andre-Pascal, 75775 Paris Cedex 16, France.

Communicating Conservation and Sustainable Development is a brief report of highlights of an international workshop on that theme conducted by the Commission on Education and Training of the International Union for the Conservation of Nature and Natural Resources **(IUCN)**. For more information, write: M.A. Partha Sarathy, Chairman, IUCN, 1, 12th Cross, Rajmahal Villas Extn, Bangalore 560 080, India. There are also documents pertaining to the organization's 18th General Assembly, held in Perth, Australia, 28 November — 5 December 1990. For more information, write: IUCN, Avenue du Mont Blanc, CH-1196 Gland, Switzerland. ◆ A small kit of EE materials in Chinese and English is available from the Conservation Association of the **Hong Kong Environment Centre**, Hongkong. The overall title is *The Earth at Risks*, composing "Era of Extinction," "The Vanishing Rainforests," "Global Fever," "Ozone Crisis" and "Acid Rain — A Neglected Fact?" ◆ The **World Resources Institute** has just published a major work, entitled *Driving Forces: Motor Vehicle Trends and their Implications for Global Warming, Energy Strategies and Transportation Planning*. This follows two other publications of WRI: (1) the voluminous, 383-page, folio-size tome, *World Resources, 1990-1991, A Guide to the Global Environment*, with its special focus on climate change and Latin America plus essential date on 146 nations; and (2) the smaller (61-page) brochure, *Lessons Learned in Global Environmental Governance*, which describes significant environmental initiatives internationally. For information about these and other WRI publications, write: World Resources Institute, 1709 New York Avenue, N.W., Washington, D.C. 2006, U.S. ◆ There is a 25-page article (among others) on "Moving Toward Economic-cum-Environmental Sustainability in Asian Developing Countries," in the Winter 1990 issue of **The Environmentalist**. Write: Science and Technology Letters, P.O. Box 81, Northwood, Middlesex HA6 3DN, U.K.

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A Universal Environmental Ethic

The Ultimate Goal of Environmental Education

An ethic may be thought of as an *ideal* of human behaviour, an environmental ethic as ideal human behaviour with respect to the environment, natural *and built.* One senses a newly emergent environmental ethic in the growing concern about the environment, in swelling movements to save the Earth, indeed in current and encouraging national and international environmental laws and regulations. Yet, we know that, as in the more familiar context of social interaction, strict obedience to the letter of the law must be complemented and supplemented by individual moral sensibility and conscience, by environmentally-ideal human behaviour, an ultimate goal of environmental education.

The examples are simple and homely. Many countries, a vast number of towns and communities, have enacted laws and established rules to prevent the littering of public roads, lands and gardens. Such laws and regulations reflect an often newly acquired collective moral sensitivity to the environment. However, we know, even guiltily, that one may *legally* litter one's own home and one's back yard, if one owns one. An environmental ethic, created or reinforced, would discourage one from doing so, even if one were alone. We may never perfectly achieve harmony with nature, but the existence of an environmental ethic, partly encoded in laws, but largely a matter of sensibility and conscience, can draw individuals in the direction of that ultimate goal of environmental education, namely, environmentally-ideal personal behaviour.

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Think globally, act locally has become the universal slogan of the environmentally concerned. It implies a *universal environmental ethic* towards which, one feels, we are massively moving. What are the principles in common in that movement and its varieties, how can they be educationally strengthened, developed, *universalized* ? The beginning may lie in a comparative study of environmental cultures and ethics across the borders of time and space.

Chronologically one might commence with ***Hinduism***, whose origins reach into the dim historical past and resist facile doctrinal definition. Roughly contemporary with the Greek epics of Homer and Hesiod are the Vedas, composed by Aryans who brought them to India and in which we find a pagan polytheism with clear affinities to the pagan polytheism of the Greeks, who were from the same Indo-European linguistic, cultural, and racial stock. The gods, identified with and manifested by features, forces and processes of nature (Sky, Earth, Thunder, and so on) were propitiated with animal sacrifice, entreated with prayer, and commanded by magical incantation.

Hindu thought gravitated toward belief in an inner, unseen, abstract reality, underlying the manifest world disclosed to the senses. For man (and other living things) it was *Atman*, the spirit or inner self, in contrast to the body. More expansively and abstractly still, all things in the divided, articulate world disclosed to the senses are manifestations of inner Being, *Brahman*. Atman and Brahmam, in turn, came to be conceptually united so that the inner Being or essence of all things is soul, spiritual being, or consciousness. Objective knowledge and subjective knowledge thus coalesce. To know one's self, not one's personality or empirical self, but one's transcendental self, is to know the nature of all things.

The empirical world is both unimportant, because ultimately unreal, and contemptible, since it seduces the soul into illusion and bad karma. It distracts the soul from finding itself, attaining liberation, and merging with the one essential, transcendental self, i.e., from achieving nirvana. On the other hand, since the essential or transcendental self of each person is the same, « same » in the strongest sense, literally identical with the Self or Being *per se* in everything else, one is led to empathy and compassion. Other forms of being, particularly other forms of life, are victims of the same deceit, frustration, and suffering as oneself and should be pitied. Indeed, there is no real distinction between self and other. One cannot, thus, profit at the expense of others, either other human beings or other natural, environmental beings since, ultimately, there are no « others » – all are ephemeral manifestations of one indivisible Being.

Lastly, there is a correspondence between the ecological world view and the world view of Hindu thought. Ecology also represents the world as a unity, that is, holistically – the unity of oneself and one's surroundings. Thus, there are two major elements in Hinduism which contribute to the development of a universal environmental ethic : empathy and compassion regarding all living things and a sense of harmony with the environment, therefore its protection and enhancement.

In ***Jainism***, more than in Hinduism or Buddhism, one finds an explicit environmental ethic. Jainism, in contrast to the core philosophy of Hinduism as discussed, is dualistic rather than monistic. There is a fundamental dichotomy between souls and body, mind and matter. Each soul, moreover, maintains its own integrity. It is not a manifestation of the universal soul. Every living thing is endowed with such a soul. And, although in each living thing the soul is, as it were, crusted over with flesh and its consciousness dimmed and confused with sensory perceptions of various modes and degrees of clarity, all souls are equally pure and perfect in and of themselves.

At the moral core of Jainism is the doctrine of *ahimsa*, the determination not to kill or harm any living thing which contains a soul as perfect or complete as one's own and which is as liable to suffering as oneself. The Jains are famous for the extreme lengths to which they go to honour this doctrine. Of course, the eating of meat especially is prohibited since animal empirical consciousness is more acute than plant consciousness. Mahavira, the founder of Jainism, himself, only ate left-over food, prepared for someone else, so as not to have personally caused injury even to the plants, or their seed, from which it was made. Moreover, food must be inspected before eating to assure that insect eggs or mites are not consumed inadvertantly. Similarly, water must be strained, not to protect one's health, but to avoid consuming any organisms in the water. One ought even to sweep one's path before walking so that one's footfall does not injure or kill any living thing. Ahimsa is a doctrine of extreme concern for other living things. It is in this respect a kind of environmental ethic contributing to the universal environmental ethic aimed at.

Buddhism stems from the teachings of Siddharta Gautama, who lived in India during the sixth century B.C. Buddhism, however, today flourishes less in India than in countries to the south and east of India, namely, Sri Lanka, Myanmar, Thailand, Kampuchea, Laos, Vietnam, China, Korea, Japan, Tibet, and Mongolia.

Core moral values in Buddhism are to be found in the five precepts : abstention from killing living creatures, abstention from stealing, abstention from lying and abstention from taking intoxicants. While these precepts embody the basic requirements for the living of a good life and the establishment of a good community, some of these are relevant to a conservationist ethic. The respect for life and property, the rejection of hedonistic life styles and the notion of truthfulness emphasizing consistency in thought and action are all ethical premises relevant for the development of environmental ethics.

The Buddhist precept concerning abstention from killing living creatures focuses attention on the ethical premise concerning the value of life. The Buddha asked people to abstain from destroying the life of human beings and animals and also condemned the infliction of suffering and pain on living creatures. He was also critical of the pleasures of hunting. The kings were expected to provide protected territory not only for human beings but also for the beasts of the forests and birds of the air. The principle of ahimsa, non-harming and non-injury to life, was a concept found in the Jains and other Indian sects and the Buddha (though he did not go to the extremes of the Jains) was alive to the

concept and preached against taking life. All this shows great feeling of sympathy for living creatures.

What can be inferred from the philosophy of Buddhism is a pro-conservationist (sound management) conception towards nature, which is critical of an aggressive attempt to exploit the environment for short-term benefits and generate gigantism, and a life style based on limitless consumerism. In short, a non-violent and gentle attitude towards nature, animals and fellow people provides the essence of the environmental stance – the environmental ethic – of Buddhism.

Zen Buddhism provides an especially fitting philosophical and experiental basis for an environmental ethic : the phenomenal world is affirmed as the delightful expression, the artifice and play, of the benign and loving common essence in all things. There is, moreover, a very strong tradition, evident in Zen poetry and art, of a nature esthetic. The contemplation of the fleeting yet eternal moment of satori are all elements of an esthetic attitude towards the environment. And the esthetic value of nature has long served as a powerful human motive for its conservation.

Zen Buddhism has certain affinities with ***Taoism***, since Zen is a version of Buddhism which evolved in China, where Taoism is native. The word « tao » literally means a way, or a road. It is the way of the universe, the orderly and harmonious unfolding of phenomena, the developmental tendency of things. If allowed to take its course, it results in natural fulfillment and perfection.

Taoism stresses the perfection of harmony between humanity and nature. It also provides the basis for a philosophy of technological development. The traditional Western forms of « high » and « hard » technology should be abandoned, from the Taoist point of view, for forms of « low » and « soft » technology or what is sometimes called an « appropriate » technology. An appropriate technology is essentially adaptive and cooperative. It does not attempt to command or control nature, rather, its approach is to bend natural processes to human advantage and adapt human ways of life to the environment.

Like Zen Buddhism, Taoism conceives the environment as an articulate unity, a unity among natural things and these things with humanity. This picture of nature as an autonomous and dynamic whole, in which humanity has its fitting and appropriate place, fits well the world view of ecology which has been described.

Confucius also accepted the Tao, but focused on the order of human society. Just as nature is an orderly and harmonious realm so ought human society to be equally orderly and harmonious. Confucianism supports an anthropocentric environmental ethic. Environmental destruction, degradation and defilement would in most cases impose deleterious effects on other people and thus violate the first two Confucian virtues, regard for others and justice. A third virtue being wisdom, it would also be plainly unwise, because imprudent or profligate, and violate a fourth virtue, namely, faithfulness to one's children or one's children's children or to one's more remote posterity. The contribution to a universal environmental ethic is clear.

During the past fifteen years of heightened environmental consciousness there has been intense controversy about the environmental attitudes of the ***Judeo-Christian*** tradition. Most of this controversy has centered on the relationship between God, Man, and Nature in the book of Genesis in the Bible.

Environmentalist critics of Genesis have claimed that since, according to Genesis, Man is created in the image of God and given dominion over nature and commanded to subdue the Earth, Genesis clearly awards Man a God-given right to exploit the Earth without moral restraint (except insofar as environmental exploitation may adversely affect Man himself). Man's unique essence among creatures, constituted in the image of God, confers upon Man unique rights and privileges among creatures. Further, God seems to have intended Man to be his viceroy upon the Earth. Man is to the rest of creation as God is to Man. Thus, if God is the lord and master of Man, so Man is the lord and master of Nature. This may be called the mastery interpretation of Genesis.

Judeo-Christian apologists have contested both this interpretation of Genesis and the untoward environmental ethical implications drawn from it. Man's unique essence, to have been created in the image of God, confers, it is argued, not only special rights and privileges upon Man, but also special duties and responsibilities. Paramount among Man's responsibilities is his responsibility to wisely and benignly rule his dominion, the Earth. To abuse, degrade, or destroy the Earth is to violate the trust the regent (God) placed upon His viceroy (man). This interpretation may be called the stewardship interpretation of Genesis.

There are two separate creation myths in Genesis : (1) The account which begins (rather than ends) with the creation of Man and the Garden of Eden in a single day and is centuries older than (2) the account which begins with the creation of light and the division of waters on the first day and ends with the creation of man on the sixth. The older, even more ambiguous, myth also is subject to two conflicting interpretations about the proper role of Man in relation to nature. It is in this myth that one finds that the role assigned to man by God is to dress the garden of Eden (which might be interpreted to mean Nature as a whole) and keep it. This injunction together with Man's naming the animals and thus establishing a kind of power over them and prerogative respecting them suggests the kind of responsible, benign vice-regency of the stewardship interpretation.

There are, as well, three possible environmental ethics consistent with the Judeo-Christian world-view, depending upon its interpretation : (1) an indirect anthropocentric, utilitarian environmental ethic associated with mastery ; (2) a more direct biocentric environmental ethic associated with stewardship ; and (3) a direct biocentric environmental ethic associated with citizenship. While both the environmental ethics associated with stewardship and citizenship are direct and biocentric, they differ in their practical implications. The former would permit benign management of Nature and wise use while the latter would imply a *laissez faire*, live-and-let-live approach, incompatible with the present more positive attitude toward environmental protection and improvement. The environmental ethic associated

with stewardship is thus both the most practical and the most acceptable interpretation consistent with the Judeo-Christian tradition. Further, since it is a possible interpretation of the role intended for Man by God in both the creation myths of Genesis, it seems the most plausible interpretation of the overall gist of the text as it has come down to us, and its most effective contribution to a universal environmental ethic.

Indeed, current teaching on the environment – as exemplified by Pope John Paul II's Encyclical on the Environment (1990) – stresses humanity's stewardship of nature. People are the guardians, the protectors, of the environment, not it owners. A way of loving one's fellow human beings as oneself, the Encyclical states, is to protect the environment and natural resources on which they depend.

The other primary source of Western culture and civilization is ***Greek mythology*** and, later, ***philososphy,*** which was disseminated throughout the Mediterranean basin by the Macedonian and Roman empires. A fairly rational account of the world, initiated early in the sixth century B.C., is the living legacy, due to its revival during the European Renaissance, which was followed directly by the rapid development of Western science, and is thus essentially Greek in both origin and fundamental character.

The dominant strains were Pythagorean, Platonic and Democritean. Some see a nascent environmental ethic in Pythagoras' belief in the transmigration of souls from human beings to animals and from animals to human beings, extending ethics beyond the sphere of human relationships to non-human natural beings. However, the pythagorean ethic has closer affinities to the contemporary animal liberation/animal rights ethic than to an ecological/environmental ethic. Moreover this concept of the soul as contaminated by its bodily and earthly prison or tomb and thus alienated from the natural environment is profoundly antithetical to an environmental ethic preaching the harmony of humanity and the environment.

This dualistic concept – a divine soul in an alien, mortal body – became a cornerstone of the later philosophy of Plato, and thanks to whose enormous influence, became virtually institutionalized in Western culture and civilization, both religious and secular. Meanwhile Greek philosophers were also occupied with the physical world, the nature of nature, one might say. It reached a culmination with Leucippus and especially Democritus, who developed the atomic theory of matter – atoms as indivisible, solid particles composing all material objects.

The resulting concept of nature as materialistic and mechanical, and of Man, because of his soul, as essentially divine and both separate from and superior to nature, has reinforced the notion of incompatibility rather than harmony with the environment. In this respect the Greek philosophical tradition of Pythagorean-Platonic dualism and Democritean atomism can be said to lie more heavily at the roots of present environmental problems than contribute to an environmental ethic. However, the other aspect, namely, the Greek stimulus to a scientific attitude, while resulting in a technology which has so often had negative environmental impacts, can also develop appropriate, environmentally conceived technology to prevent and correct the problems created by the former.

In this sense, too, Greek philosophical tradition can contribute an essential component of an environmental ethic – scientifically sound environmentalism, that is, the rationale of a secular environmental ethic.

Although the culture and civilization of the Middle East and North Africa are rooted in the Judeo-Christian and Greco-Roman traditions, there is a third major element which spread world-wide, ***Islam.*** During the European Dark Age, Greek science was preserved and developed by Islamic scholars and Mohammad, the Prophet of Islam, regarded himself to be a prophet of the same God and in the same prophetic tradition as Jesus, Moses, and Abraham before him. The Islamic cultural tradition, therefore, has been substantially influenced by Judeo-Christian and Greco-Roman ideas, although it constitutes a distinctive historical and cultural context for environmental ethics.

The Koran is less ambigous than Genesis about the relationship of human beings to nature. It makes explicit certain themes which are only suggested implicitly in the more ancient account in Genesis. According to the Koran, Allah created the first man and woman, Adam and his wife, from a clot, or clay, or dust, and breathed into His creation the breath of life. All other things are explicitly created by Allah for the sake of, the use of, and the benefit of man. Adam and his seed are explicitly made to be the viceroy of God on Earth. According to Islam, then, man is at the moral center of creation and is, indeed, the very purpose of the creation. As in Genesis, so also in the Koran, it is man's right to have dominion over and to subdue the Earth and all its non-human denizens. Indeed, in the Koran, not only are animals and plants subjected to man, the rivers, the sea, even the sun and moon are subjected to and subservient to man. Man's dominion over the earth and the subordination of the creation to man is spelled out in no uncertain terms.

Man's role as viceroy or agent on earth should not, however, be confused with tyranny. Man's dominion over the Earth should be benign, not wantonly destructive. The doctrines of Islam are equally explicit and emphatic that man's relation to nature should be one of stewardship not mastery.

The creation of Allah is, as it were, a divine work of art. The whole world and all of its parts are understood in Islam as « signs » to man indicative of the greatness, the goodness, the subtlety, the richness, and so on of the creator. To deface, defile or destroy nature would be an impious or even blasphemous act. Although man is accorded the usufruct of the Earth, he is not given the right to abuse it with impunity.

The sanctions on environmental abuse (direct abuse of the natural environment, setting aside, for the moment, the indirect effets on people) are of two kinds. The Earth is a temporary abode for man, and Allah, according to Islam, rewards and punishes deeds done on Earth in the next life. Persons, therefore, who blaspheme against God by defacing, defilling, or destroying His creation will be punished accordingly in the next life.

However, even though the Earth is only a temporary abode for man, and meant to be at the service of man,

Notice to Readers : Connect

20/06/91

Dear Reader,

The UNESCO-UNEP International Environmental Education Programme (IEEP), jointly launched in 1975, is currently in Phase VII, which covers the biennium 1990-91. Each year, four issues of the IEEP Newsletter CONNECT have been published in six languages for a total of some 20,000 copies per issue. We would very much like to have your comments on CONNECT in a second survey of its usefulness (see CONNECT March 1988 for a report on the furst survey) and to help us further to impove it. Please fill in the questionnaire below and return it to the address printed on the back of this form. Thank you in advance.

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man is very much at one with the Earth, at least while living on it. Man is made of the stuff of the Earth, dust or clay, and he is, albeit exalted above all others, a creature among creatures. There should, thus, be a kind of fellowship between man and other creatures, according to Islam. Islam, moreover, values scientific knowledge of the environment, whose study is encouraged and supported by the doctrine of signs. As we learn more about the natural world, through the geological and biological sciences, it has become abundantly clear that the natural environment is systemically integrated, a seamless whole. Hence, the destruction of one part of the environment will reverberate throughout the whole. Now as man, according to Islam, is, after all, made of the stuff of the Earth, a creature among creatures, environmental destruction is necessarily self-destruction. This too is a kind of sanction against environmental abuse – a this-worldy, not other-worldy, type of sanction.

The Islamic tradition clearly suports, perhaps even more unequivocally than the Judeo-Christian tradition, a direct biocentric environmental ethic of the stewardship type. The environment, though given over to man's role and subservient to man, is the direct object of respect and care, because it is the handiwork of God and a sign of His power and majesty. The Islamic tradition also clearly supports an indirect anthropocentric environental ethic.

According to Islam, all human beings are descended from Adam and Eve. Hence all human beings, regardless of race, colour, or national origin, are equally members of one extended family ; no people are privileged or chosen ; no one is inherently better than anyone else. In Islam, moreover, there is a strong emphasis on justice. Justice, indeed, is one of the cornerstones of the Moslem religion. Since environmental abuse and/or destruction are, more often than not harmful to people, they are a form of injustice. To ruin or destroy the environment is tantamount to either bodily injury or the destruction or theft of property or both. Further, ignorance of the complex or delayed effects of action in the environmental arena is no excuse, since Islam stresses the moral importance of knowledge, no less than of justice. These are all truly elements of an environmental ethic with universal implications.

Reviewing the foregoing traditional cultures and religions to find what they have in common with regard to humanity's relationship and responsability vis-a-vis the enviroment – in other words, the common ingredients of a universal environmental ethic – is the historic role of environmental education. An ethical attitude toward the environment personally and professionally, individually and collectively, and universally valid, is both the assumption and the goal of this new great field of education, making EE the principle, indispensable instrument for its development.

Indeed the aim of this article has been to provide the cultural and religious background and elements for just such an EE programme activity. The nascent environmental ethics demonstrated in the various traditional beliefs may be developed in two complementary ways. Firstly, both inside and outside the formal school system, by contemporary cultural custodians – priests, rabbis, mullahs, scholars, and religious and secular educators generally, who are environmentally aware, who speak with authority for their respective intellectual traditions, and who realize that living bodies of belief change and evolve in response to the vital needs of the times.

Secondly, they may be developed through alliance with contemporary scientific concepts and research findings of the bilogical and environmental sciences. Some modern scientists even argue that they are often simply *rediscovering* concepts intuitively grasped in traditional cultural world views. For example, Taoism appears to have inderstood the cyclical nature of biological processes, the American Indians ecological interdependency, Hinduism and Jainism the continuity of life. Animist religions, as well, strongly emphasize the link between humanity and the environment. And so on. Traditional environmental attitudes, resting upon such intuitively grasped ideas, can frequently be reinforced, enriched and developed by means of the more detailed theories and findings of the contemporary life sciences.

In turn – and as a conclusion – environmental education and its ethical component not only find their roots in these world cultures and religions, but their sound development requires that they be solidly anchored in them – with due regard for the requirements of changing, evolving and differing civilizations.

(The above article is based on several studies prepared in the framework of the UNESCO-UNEP International Environmental Education Programme. The IEEP has, additionally, conducted a consultation meeting of experts on « Developing Environmental Ethics », in Cairo, Egypt, March 1991, of which there will be a report in a future issue of *Connect*.)

EE News and Publications

A comprehensive, colour-illustrated, folio-size brochure, titled ***UNEP PROFILE*** has been published by the United Nations Environment Programme (UNEP). The handsome brochure covers the history of the UN agency and its manifold activities, dealing with the ozone layer, climate, wastes, marine environment, water, and degradation, forests, bilogical diversity, industry, energy, settlements, the Earthwatch programme, chemicals, environmental law, development planning and cooperation, environmental education and training (featuring the UNESCO-UNEP International EE Programme), etc. With reference to the last, up to one fifth of UNEP's budget ($58, 849, 167 in 1989) is spent on education and training, covering over 30,000 technicians, educators and decision-makers since 1973. *Other recent UNEP publications :* ***Environment in Print,*** the 1990-91 publications catalogue of UNEP : ***Images of Environment,*** the 1990-91 film and video

catalogue of UNEP ; ***ET Worldwide***, UNEP's periodic compendium of opportunities in enviromental training ; Nos. 67-71 of ***Outreach*** (see description in *Connect*, March 1989) on « Crops » ; Nos. 1 and 2, 1991, of the organization's magazine, Our Planet, devoted respectively to « Overheating the Earth : the Greenhouse Effects Feeds on Itself » and « Tourism and the Mediterranean Environment ».

For more information, write to : The Distribution Assistant, Information and Public Affairs, UNEP, P.O. Box 30552, Nairobi, Kenya.

Urban Waste : A Global Problem, a citizen's investigation of his garbage, has been published by the Swiss National UNESCO Commission in collaboration with the Conzorcio per l'eliminazione dei rifiuti del Luganese and the Swiss Office for In-Service Training of Upper Secondary Teachers. The brochure is based on a more detailed and complete course designed for secondary-school teachers for inclusion in their EE programmes. The course is available in French from : « Ecology », Les Joyeuses 3, CH-2022 Bevaix, Switzerland. The brochure is available in English, French and German by writing to : *Connect*, address on last page.

A brochure, titled ***Fighting Noise in the 1990s***, has been published by the Organization for Economic Cooperation and Development ***(OECD)***. It covers an assessment of noise abatement policies and an examination of noise abatement policies in six countries (Australia, France, Germany, Japan, the Netherlands and Switzerland). Write : OECD Publications Service, 2, rue Andre-Pascal, 75775 Paris CEDEX 16. ◆ *Environment International* has issued a special number on ***Public Health Implications of Environmental Noise,*** which is a detailed scientific assessement of more than 600 pages. Write : Pergamon Press, Fairview Park, Elmsford, New York 10523, US ; or Pergamon Press, Headington Hill Hall, Oxford, OX3 OBW, UK.

Living Earth Foundation is a British environmental organization which has initiated a three-year programme to encourage and enhance multi-disciplinary EE in the South West province of Cameroon, partly funded by the UK Overseas Development Administration. One major goal of the ***Cameroon*** EE Programme (CEEP) is to educate the nation's youth in how to strike a proper balance between exploiting the country's natural resources, particularly its rainforests, and preserving them for posterity. A *Progress Report* on CEEP is available by writing to : Living Earth Foundation, 10 Upper Grosvenor Street, London W1X 9PA, UK.

Two reports of special EE interest have been received from the Quebec Ministry of the Environment (both are in French) ; (1) *The State of Environmental Education at the Primary and Secondary Levels in Quebec Schools* ; and (2) *Summary Analysis of EE Programmes* (in primary and secondary schools of Quebec). The first report is the principal document. It consists of six parts and contains all aspects of the research that had been undertaken : the point of view of the educators vis-a-vis environmental education ; what is actually being done in the way of EE at the primary and secondary levels, etc. The second report describes the contribution of current educational programmes of primary and secondary schools of Quebec to environmental education. Additionally : the November and December 1990 issues of the Quebec Ministry of the Environment's *Bulletin sur l'éducation relative à l'environnement* contain, respectively, EE training programmes that are being currently undertaken and EE materials produced by governmental and nogovernmental bodies. For the availability of the reports (whose copies are limited) and the newsletters, write to : Ministère de l'Environnement, Division de l'éducation et de la formation, 5199, rue Sherbrooke Est, Bureau 3501, Montréal, Québec H1T 3X2.

Publications of the IEEP (Updated)

The March 1990, September and December 1989 issues of *Connect* contained the three groups of publications of the UNESCO-UNEP International EE Programme : (1) the « Environmental Education Series » (2) Basic Documents, and, (3) Final Reports. The list below contains publications of the IEEP which have appeared since those dates and carry the sequential numbers. All publications are available to institutions involved in environmental education by writing to *Connect*, address on last page. *Connect* itself, the international EE newsletter appearing quarterly in six language editions, is available to EE professionals as well by writing to the same address and requesting the English, French, Spanish, Arabic, Russian or Chinese edition.

Environmental Education Series

30. *An Environmental Education Approach to the Training of Middle Level Teachers : A Prototype Programme (1990)*, 177 pp. This publication describes that portion of a Middle Level Teacher Education Programme (TEP) designed specifically to train middle level school teachers in environmental content and methods, namely, a Middle Level Specialization in Environmental Education (SEE). The SEE portion, as presented in this publication, contains two sets of courses : a core set, which exclusively emphasizes EE content and methods, and a set of more traditional disciplinary courses into which an environmental dimension has been « infused » or integrated to a greater or lesser degree. Part I includes goals for SEE, translation

of these goals into learner objectives, a model of environmental literacy and several crucial components of this model as they relate to the goals. Part II provides background and assumptions concerning TEP as a whole. Part III outlines SEE, providing a full description of core courses, an outline of suggestions for the inclusion of content and/or methods in « infusion » courses, and suggestions regarding the scope and sequence of the SEE courses. Part IV focuses upon the key variables of intructional design, resources and methods, and presents a teaching model as well as a set of relevant instructional methods and resources reflecting the goals described in Part I. Part V also includes sample activities for the SEE courses. (English)

Basic Documents

14. *Harvesting One Hundredfold – Key concepts and case studies in environmental education*, by Donella H. Meadows (1989), folio-size, 62 pp. The substantive part of the Contents table indicates the subjects covered (note also the subtitle) : What is Environmental Education and Why is It Important ? ; The Key Concepts of Environmental Education (see the lead article of *Connect*, June 1990, for a summary) ; Methods and Tools of Environmental Education ; and Some Case Studies in Different Educational Contexts. There are also a conclusion, a glossary and a reading list. (English)

15. *Guide for Training of Technical and Vocational Education Teachers in Environmental Education* (1989), 76 pp. This Guide was prepared by faculty members of the Philippine Colombo Plan Staff College for IEEP. The Table of Contents includes these chapters : EE and Its Role in Educational renewal ; The Need and Place of EE in TVE (Technical and Vocational education) and in Teacher Education for TVE ; Ways and Means of Providing EE Training for TVE Teachers ; Essential EE Contents for TVE Teachers ; EE Methologies to be Emphasized in TVE Teacher Training ; and Evaluation of EE Techniques. There are also a glossary and a bibliography. (English)

16. *Environmental Education : Selected Activities of the UNESCO-UNEP International Environmental Education Programme, 1975-1990.* (1990), 99 pp. This document contains a brief description of a series of *selected* activities of IEEP considered substantive and of special interest to researchers, curriculum developers, teacher educators and educational planners and administrators. It consists of two parts. Part One consists of an introduction summarizing IEEP activites analytically. Part Two describes the fields of action of IEEP under the headings of (1) exchange of information, (2) research and experimentation, (3) curriculum and materials development, and (4) training of educational personnel. (English)

17. *Environmental Education Handwork for Educational Planners* (1990). 119 pp. This Handbook was prepared by India's National Institute of Educational Planning and Administration (NIEPA) for the UNESCO-UNEP International EE Programme. The Table of Contents includes : The Role of Educational Intervention in Environmental Action ; A Framework for a National Environmental Education Strategy ; Formulation of a National Policy on Environmental Education ; Planning for Environmental Education ; Management of Environmental Education Programmes ; Training of Educational Planners and Administrators in EE : and a Management Information System for EE. The appendices include : Alternate Planning and Implementation Arrangements for EE ; the Stockholm Conference (Declaration and Principles) ; Declaration of the Tbilisi Conference ; and the Belgrade Charter. (English)

18. *Environmental Education in the Pan-Amazon, first Phase Report under the Implementation Plan of the Pilot Project for Incorporation of Environmental Education in the Curricula of the UNAMAZ Members.* (1991). 98 pp. This First Phase Report was prepared by the Association of Amazonian Universites (UNAMAZ) for IEEP. The contents are devoted to : Discussing the Environmental Question : An overview of the work carried by Amazonian universities ; The theoretical Discussion ; Relevance ; Diagnosis : What is being done at the Amazonian Universities to introduce the environmental dimension through academic activities ; and the Proposals : changes and strategies. There are also bibliographic references and 62 pages of appendices which include 25 tables on the relevant curricula of UNAMAZ members. (English)

Final Reports

43. *Final Report.* Seminar on Environmental Education in Sri Lanka, Colombo, Sri Lanka, 9-13 February 1988. This seminar was organized by Sri Lanka's Central Environmental Authority with the cooperation of IEEP. There were working discussions of, and recommendations concerning, all levels of EE, both formal and nonformal as well as presentations on all aspects of Sri Lanka's environment. (English)

44. *Final Report.* A Greener Pacific : Environmental Education at a General Level in Tertiary Institutions of the Pacific Sub-Region – Proceedings of a Seminar and Workshops, Sydney, Australia, 24-28 September 1989. This seminar, sponsored by IEEP, was organized by and held at the Graduate School of the Environment, Macquerie University (Australia). The report contains presentations of EE at the tertiary level in Australia,

New Guinea and New Zealand ; workshop reports ; and appendices consisting of case studies of universities in the three countries mentioned. (English)

45. *Final Report.* International Symposium on Environmental Education for Economists and Planners, Valletta, Malta, 5-7 December 1989. This international symposium was organized and convened by Malta's Foundation for International Studies in cooperation with IEEP. Proposals, recommendations on EE for economists and planners ; interdisciplinarity and holism ; paradigms for envornmental economics ; environmental policies and education for planners and economists and other professionals ; environmental management and control ; production of educationaal materials ; international cooperation ; and international agencies and organizations involved in EE. (English)

46. *Final Report.* Consultation on the Use of Findings of Environmental Research in Environmental Education. Valletta, Malta, 11-13 December 1989. As above (Final Report No. 45), this consultation meeting was organized and convened by Malta's Foundation for International Studies in cooperation with IEEP. Proceedings of the three plenary sessions, suggested guidelines and conclusions and opening speeches are contained in this report. (English)

47. *Final Report.* Environmental Education in Korea : National Seminar on Developing Strategies and Action Plans for Development of Environmental Education in Korea, Seoul, 17-18 April 1990. This national seminar was organized by the Korean Educational Development Institute in cooperation with IEEP. Emphasis is laid upon the environmental and EE situation and prospects in Korea, but presentations of EE in Japan, the U.S., then Federal Republic of Germany and France are also included. (English)

48. *Final Report.* Proceedings of the Two-Day National Workshop of Environmental Education, jointly organized by Department of Environment and Bangladesh National Commission for UNESCO, held at Barc, Dhaka, 14-15 May 1990. (English)

49. *Final Report.* Interregional Training Seminar on Incorporation of Environmental Education into General University Education, Cairo, Egypt, 7-12 July 1990. This training seminar was organized by the Institute of Environmental Studies and Research, Ain-Shams University, Egypt, in cooperation with IEEP. Proceedings, country reports, suggestions for the incorporation of EE into universities of participating countries and courses developed by participants in different disciplines with an incorporated EE dimension are included in the report. (English)

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Environmental Education for University Students

People who will have the greatest impact on the environment, for good or ill – tomorrow's policy and decision makers, engineers, architects, administrators in the public and private sectors, doctors, lawyers and teachers, not to omit environmental specialists – are now with very few exceptions students at universities or other higher-education centres of learning. To impart to them the environmental knowledge and know-how for environmental care and improvement is literally a life or death matter for our one planet, the Earth.

In view of the vast diversity of university and higher-education institutions worldwide, as well as the prodigious range of subjects and specializations offered, at best one might offer broad guidelines for the integration of an *environmental dimension*, that is, *environmental education* (EE), into general university education. For all university students should have a high environmental literacy, forming an environmentally aware and concerned citizenry indispensable for all environmental decisions.

Two special groups of university students should be mentioned as target audiences for more intensive environmental education and training following that given to students in general. They are : (1) student scientists, technologists and other future experts and professionals who will be dealing directly with environmental concerns (foresters, biologists, hydrologists, ecologists, agriculturalists, and the like) ; and (2) those students of specific professions and social activities whose future work will have an influence and impact on environmental management, both rural and urban, somewhat less directly (engineers, architects, urbanists, economists, labour leaders, industrialists, et al.).

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Considering, then, the general university student, the university teacher should assume virtual environmental ignorance on the part of these students – unless (which is generally unlikely) their secondary-school education has already given them an obligatory basic environmental education, namely, its fundamental concepts and principles.

For all students, a major aim must be to show them how to analyze problems, find causes and their effects, and make clear what are the conditions under which certain processes take place and what effects these have on society – literally on the quality of life. It should also be made clear what are the specific political, social, economic and industrial concerns and influence at work, and, further, the role of research. *Producing relevant data is one thing. Applying them to solve problems is another.*

Should there be a special environmental education course ? Should it be optional or obligatory ? Assuming such a course is chosen for introducing EE at the university level (a preferable alternative will be considered further on), ideally it would be obligatory for all students – certainly if environmental literacy for all students is the chosen goal (as, we believe, it should be). Otherwise, it should be obligatory for all students who can be expected to come into contact directly with environmental concerns, and optional for all others.

The course should include the essential aspects of the three distinguishable levels or systems of being (see the lead article of *Connect*, June 1990, « Basic Concepts of EE ») : 1. the physical planet, its atmosphere, hydrosphere (waters) and lithosphere (rocks and soils), and their physical and chemical laws ; 2. the biosphere, all living species, and their physical, chemical, biological and ecological laws ; and 3. the technosphere and sociosphere, the human-created world of buildings, streets and machines, governments and economies, arts and religions and cultures, which obey physical, chemical, biological and ecological laws as well as further laws of human devising. The course would emphasize the interconnections of all three ; population growth and the planet's carrying capacity ; environmentally sound, sustainable development and also socially sustainable development – the notion of development appropriate not only to the environment and resources but also to the culture, history and social systems of the place where it occurs. Particular attention would be paid as well to the role of the country's government (national and local), their environmental responsibilities, legislative and decision-making processes.

Conceivably the course could be taught by one (exceptional) teacher (with sufficient knowledge and skills in all the disciplines involved – from biology to history and geography, technology and esthetics, and more), *if* the course is a relatively short one, that is, one or two semesters. Better would be an interdisciplinary team of teachers, each teaching in turn, each knowing exactly what the others have taught before him or her, or will teach afterward. To further integrate such an interdisciplinary, team-taught course, after the initial orientation in basic environmental concepts (as described), the class might be confronted with a complex environmental problem to be solved, preferably but not necessatily local, with each teacher taking up in proper sequence his or her aspect of the problem bearing upon the cause and the solution. The problem could involve air, water or soil pollution from a known source (factory emissions, agricultural pesticides, etc.). The problem will be all too easy to find.

Several questions emerge from even so summary a description of a short EE course : 1. How could it be made short, if so much is to be taught and, above all, learned, since field exercises and problem solving are essential parts of the EE process ? 2. How can one expect anything but difficulty in trying to arrange for team-teaching of a new course in a curriculum and staff already reaching overload ?

Resolving these problems is why the introduction of environmental education has been recognized (and hailed) as one of the most renovating innovations in educational systems.

The most immediate and practical approach to the introduction of EE to university students on a multidisciplinary basis would be to incorporate environmental themes – an environmental dimension – into most, if not all, existing disciplines of the various faculties of the university, most obviously in such disciplines as the natural and human sciences, but not limited to them. If the local or regional environment and its problems are the point of reference in each case, then, in effect, there would be a kind of coordinated team-teaching, as discussed previously. Incorporation of the students' environment, moreover, would give each discipline the relevance that is now so much sought, making it alive and pertinent, rather than drily academic – particularly if participation in problem solving is part of the EE process. In this sense, too, the university would be educating for responsible citizenship, a goal high, if not at the top, of its educational priorities.

The most revolutionary approach, which is actually an evolutionary development from the above, would be not simply to add an environmental dimension or even component to a discipline – such as creating new disciplines of environmental chemistry, environmental law, environmental economics, etc. – but to conceive the whole discipline as revolving around the environment, viewed as a complex whole – from the subterranean water table to the stratospheric ozone layer, *and beyond*, if one wild idea of expelling nuclear waste into outer space ever becomes a serious proposition. This involves the conception of one's environment in its totality – natural and built, taking into account air, water and soil, urbanism and land management, economics and esthetics, sociology and ethics, history and technology, *and* politics. This is the essence of the renovation in education which a comprehensive environmental education brings about.

It means teaching about – in and for – the environment, from its elementary levels to its research frontiers in vital environmental concerns. Exploring in depth their own particular area of competence in the vast expanse of the environment, the disparate disciplines would not simply extend an arm towards other disciplines, but move as whole entities towards each other – entire curricula would have a coherence and relevance now often seen as lacking.

It is commonplace to speak of the interrelatedness

of the world, its natural and built environment, and its inhabitants. « It is almost as trite to speak of the essential unity of knowledge » (one reads in a brochure on *Universities and Environmental Education* ; see below). Both are often said, but are too rarely put into educational practice. Teaching environmental concepts and principles *comprehensively* does put these truths into pedagogic practice by establishing precise and specific links between the disciplines concerned and the environmental theme introducted. Furthermore, it demonstrates that environmental decisions made in a restricted professional, industrial or other field have environmental implications beyond the impact on the immediate, *restricted* area of the particular professional or industrial concern. And this will have emerged convincingly from practical, problem-solving experience.

In this connection, one contributor to the brochure just mentioned, indulged in a « dream ». If what has been considered above, Professor Moss concluded, « is a valid appraisal of the situation, then there are very few, if any, disciplines which do not have an environmental dimension, in some sense at least. If those links can be explored in the ways... suggested, then it seems to follow that environmental [studies] might begin to link together a whole range of disciplines. If that is not so, then might it not be that the environment and its importance could serve as the basis for a whole [new] approach to education ?... It is perhaps a thought worth pondering as an underpinning for future exploration of the problems of [education] integration », that is, of educational innovation for a new relevance to the changing, endangered world around us.

(Much of the above article has been taken from a publication of the papers presented at an international seminar of experts, sponsored by UNESCO, titled *Universities and Environmental Education*, particularly those of Professors D.J. Kuenen and R.P. Moss. Other available UNESCO publications include : *Integration of EE into General University Teaching in Europe*, 394 pp. ; Final Report of a training seminar on the same subject, largely for Arab States ; a two-part Final Report on *EE for Pan-Amazonian Universities* ; and (1) the Report on an *Experimental Project on the Incorporation of EE into University General Education in Ghana* and (2) the interdisciplinary EE course accompanying the project. All these publications are available to institutions, in English only, by writing to : *Connect*, address on last page.)

EE Field Reports

Incorporation of Environmental Education into Primary-School Curricula

Held in Valletta, Malta, 27-31 May 1991, an international training seminar on the incorporation of environmental education into primary-school curricula was organized by the Foundation for International Studies of the University of Malta in cooperation with, and in the framework of, the UNESCO-UNEP International Environmental Education Programme (IEEP). There were forty-one participants who came from twenty countries : Brazil, Canada, Denmark, Egypt, Finland, France, Germany, Greece, India, Italy, Jamaica, Kenya, Malaysia, Nepal, Norway, Spain, Sri Lanka, Ukrainian SSR, U.S.A., and the host country, Malta. (See also the report following on the international training seminar for the incorporation of EE into *secondary-school curricula*, held in Cairo, Egypt.)

The objectives of the seminar were : (1) to discuss guidelines and strategies for the incorporation of EE into primary education ; (2) to examine and evaluate for revision the EE prototype curricula for primary schools developed under IEEP on a subregional basis and to explore possibilities for their national adaptation ; and (3) to augment the exchange of information and experience through the presentation of country reports with emphasis on EE in the primary-school curricula of participating countries.

A combination of plenary sessions and workshops was employed. The plenary mode facilitated the presentation and discussion of papers and reports, while the four workshops allowed for the detailed critical examination and evaluation of the prototype curricula prepared by IEEP for the Arab States and the Caribbean, South Asia and the ASEAN regions.

« Infusion », that is, incorporation of an environmental dimension into the various subjects taught, was considered the favoured model for introducing EE into primary education. Country reports revealed that a variety of EE activities were being undertaken in all participating states ; and that in several, such as Malaysia, India and Sri Lanka, there has been notable progress in the establishment of EE mandates and curriculum development, including political decisions to incorporate EE into the formal education process. Among the recommendations was the suggestion that the presentation of the Carribbean programme, « Arts in Environmental Education » (contained in the Final Report ; see below), be published in a form suitable for international distribution and use.

(The Final Report of the Malta training seminar is available in English only to institutions by writing to : The Foundation For International Studies, University of Malta, St. Paul's Street, Valletta, Malta. The Final Report includes speeches at the opening and closing sessions, proceedings of the seminar, workshop comments and critiques on the EE prototype curricula for primary schools developed under IEEP, country reports, etc.).

Incorporation of Environmental Education into Secondary-School Curricula

An international training seminar on environmental education in secondary-school curricula was held in Cairo, Egypt, 29 June-4 July 1991. The seminar was organized by the Egyptian National Commission for UNESCO in the framework of the UNESCO-UNEP International Environmental Education Programme (IEEP). There were twenty-seven participants who represented fifteen countries : Egypt, Ghana, India, Italy, Jamaica, Jordan, Kenya, Malta, Norway, Philippines, Sudan, Syria, Tanzania, Turkey and United Kingdom.

The objectives of the seminar were : (1) to familiarize participants with goals, objectives and development of environmental education (EE) and its need and place in secondary-school curricula ; (2) to provide participants with guidelines for the incorporation of EE into secondary school education ; (3) to familiarize participants with the EE prototype curricula for secondary schools developed under IEEP on a subregional basis, and to explore possibilities for their national adaptation ; and (4) to enhance the exchange of information and experience through the presentation of country reports on EE in secondary-school curricula of participants' fifteen respective countries.

Participants were divided into four workshop groups, according to the four world regions represented (African, ASEAN, Arab and Caribbean), with the goal of examining and evaluating four relevant documents of the « Environmental Education Series » of the IEEP, eight EE curriculum prototypes for the four regions and the fifteen country reports. The results were reported to the seminar's plenary sessions and a final report drafted. The four documents of the « EE Series » (Nos. 22, 25, 29 and 30) are titled : *Procedures for Developing an EE Curriculum* ; *Strategies for the Training of Teachers in EE* ; *Prototype EE Curriculum for Middle School* ; and *An EE Approach to the Training of Middle Level Teachers : a Prototype Programme*.

(The four seminar documents are described in the September 1989 and June 1991 issues of *Connect* and are available to institutions by writing to the newsletter, address on last page. The Final Report, similarly available when published, will contain the seminar proceedings, workshop results, country reports, strategies, guidelines and recommendations, and principal speeches.)

Seminar on EE Strategies for Maghreb Countries

A subregional seminar on « National Strategies for Environmental Education (EE) in Countries of the Maghreb », organized by Algeria's Ministry of Scientific and Technological Research in cooperation with the Ministry of Education, UNESCO and ALECSO in the framework of the UNESCO-UNEP International EE Programme (IEEP), was held in Algiers, Algeria, 6-8 November 1990. The objectives of the seminar were : (1) the exchange of information and experiences on EE and the environment in Maghreb countries ; and (2) formulation of recommendations on strategies to be employed in the development of EE in those countries. There were thirty-seven participants from Tunisia, Morocco, Libya, Mauritania and the host country.

The participants were divided into two working groups which discussed EE programmes for the primary and secondary educational levels respectively. General recommendations included : incorporation of environmental problems as a priority into the educational process of Maghreb countries ; improvement of EE programmes ; integrate environmental laws and regulations into civic studies ; inculcate pupils and students with moral and ethical values aimed at respect for and protection of the environment ; highlight the environmental dimension in the elaboration of national education programmes ; reinforce and enrich pre-service and in-service EE teacher-training programmes ; develop an EE programme for the Maghreb which takes into consideration the environmental problems of each country ; develop scientific environmental research and make the results available for environmental education ; integrate EE into all lifelong education programmes, adult education and the mass media ; coordinate all bodies involved directly or indirectly with EE ; organize the exchange of information, experience and materials in EE among countries of the Maghreb ; creation of environmental films and a documentation centre for the Maghreb with the aid of IEEP ; and creation of a permanent commission to follow up on the implementation of the preceding recommendations.

(The Final Report of the Maghreb seminar contains the proceedings, recommendations, the situation of EE in Algeria, an approach to the environment for education programmes of the Maghreb, the environmental dimension in science and the social sciences. For the availability of the Final Report in Arabic or French, write to : Centre de Radioprotection et de Sûreté, boulevard Frantz Fanon, Algiers, Algeria.)

Consultation Meeting on Environmental Ethics

A consultation meeting on environmental ethics was held in Cairo, Egypt, 3-8 March 1991. The meeting of experts was organized by the National Centre for Educational Research and Development of Egypt in collaboration with and in the framework of the UNESCO-UNEP International EE Programme. There were nineteen participants and observers. The principle objective was to collectively study the concept of environmental ethics and to suggest ways and means for their inculcation in individuals, families, communities and nations.

The main items of the agenda included : an overview of the holistic nature of the environment and the major causes and effects of environmental problems ; environmental ethics and their need and place in contemporary civilizations ; EE and its role in the development and inculcation of environmental ethics from the individual to the international level ; the concept, need, place, development, inculcation and practice of environmental ethics in world cultures.

There were seven working documents (the first five of which were prepared under the auspices of the International EE Programme) : (1) Environmental Ethics in Egyptian Culture, a Case Study ; (2) An Australian Perspective on Environmental Ethics ; (3) Environmental Values Education ; (4) Environmental Ethics in Buddhism ; (5) The Concept and Need for Environmental Ethics ; (6) The Accident at the Chernobyl Nuclear Power Station and Formation of Ecological Ethics ; and (7) Environmental Ethics Development through Environmental Education.

Each of these documents was presented at the plenary sessions, generally by their authors, and discussed by participants. In addition there were presentations on environmental ethics in a global age, in Ancient Egypt, in Islam and in Egypt today. The discussions aimed towards finding common elements for a universal environmental ethic (a subject dealt with at length in the leading article of *Connect*, June 1991). Tentative guidelines for the incorporation of environmental ethics into education in general and EE in particular were drawn up, as well as the strategies and techniques, evaluation methods and teacher training involved.

(A final report contains the proceedings of the consultation meeting, presentations of the working documents and principal papers, the guidelines established and comprehensive appendices of speeches, documents and discussions. The Final Report will shortly be available, in English, to institutions by writing to *Connect*, address on last page.)

National Seminar on EE Strategies for Ghana

A national seminar, whose objective was formulation of a strategy and action plan for the development of environmental education in Ghana, was held in the subject country, 6-10 August 1990. The seminar was organized by Ghana's Environmental Protection Council in the framework of the UNESCO-UNEP International EE Programme (IEEP). There were eighteen participants and twelve observers at the seminar representing the government ministries concerned and institutions of higher education.

The seminar recommended that the strategy for Ghana be based on long-term sustained environmental education at all levels – village, town, district, regional and national ; that the strategy include information, formal and nonformal education and teacher-training activities ; that it also involve environmental research projects of a cooperative and interdisciplinary nature ; that these activities in turn involve extensive cooperation among governmental and nongovernmental organizations and the UN system, particularly those involved in international environmental and environmental education programmes, notably the UNESCO-UNEP IEEP. Lastly, the strategy is to include publication of EE leaflets, brochures, texts, etc., aimed appropriately at decision makers as well as students and the general public as to the nature of the environmental problems faced and the proper scientifically based measures and actions to be taken.

The EE action plan recommended for Ghana included the above strategic goals with priority to be given to the development of EE as an integral part of basic education, including literacy and post-literacy education, for youths and adults alike, as well as primary, junior and senior secondary schooling, technical and higher education.

It was specifically recommended that the Environmental Protection Council consult with university officials on measures for the incorporation of EE into general university education. (In this connection, it should be noted that the University of Ghana, Legon-Accra, is completing an experimental project in this regard under contract with IEEP, upon which a report will be made in a future issue of *Connect*.) Other recommendations for EPC involved revitalization of its EE Committee to oversee school programmes and their progress ; formation of environmental clubs and publishing of relevant periodicals ; and organization of workshops and seminars for such groups as journalists, editors and other mass media personnel, and short-term seminars for primary-school teachers.

It was further recommended that in the nonformal/public sector each District Assembly form an EE committee and include environmental awareness programmes in all their activities ; that the Department of Community Development and Social Welfare, because of their direct relationship with people at the village and community levels and in labour groups, also include environmental awareness issues in their programmes.

(For the availability of the Final Report, in English, of the Ghana EE seminar reported above, write to : Ghana National Commission for UNESCO, Ministry of Education, P.O. Box 2739, Accra, Ghana.)

Developing Environmental Education in Turkey

A seminar on developing national strategies and an action plan for environmental education in Turkey was held in Ankara, 7-8 June 1990. The seminar was organized by the Prime Ministry Undersecretariat for Environment in the framework of the UNESCO-UNEP International EE Programme. There were eighty-eight participants, members of universities, national institutes and oganizations concerned with education and the environment.

The first part of the seminar was devoted to the state of the environment in Turkey, particularly its problems and solutions, and a decision taken that a report on the environment be prepared and disseminated. The second part concentrated on general policies and strategies for the development of environmental education nationally, both formally and nonformally, as well as the in-service environmental education and training of politicians and decision makers, teacher-trainers and public employees.

(A Final Report containing the proceedings, summaries of the presentations, recommendations and conclusions is available, in English only, to institutions by writing to *Connect*, address on last page.)

EE News and Publications

Recent **UNESCO**-sponsored publications of interest to environmental educators include : *Sourcebook : Ecological Economics*, 370 pp., a collective work prepared by the European Coordination Centre for Research and Documentation in Social Sciences (Vienna Centre) ; *A Greener Pacific : EE at a General Level In Tertiary Institutions of the Pacific Sub-Region*, proceed-ings of a seminar and workshops, 164 pp., folio-size, published by the Graduate School of the Environment, Macquarie University of Australia ; and *Environmental Education for Our Common Future*, 98 pp., a handbook in English for teachers in Europe, sponsored by the Norwegian National Commission for UNESCO in cooperation with IEEP. For this last publication, write to : Norwegian National Commission for UNESCO, P.O. Box 1507, Vika, Klingenberggaten 5, Oslo 1, Norway. For the other publications, write to : Environmental Education Section, Division of Education for the Quality of Life, UNESCO, 7 Place de Fontenoy, 75700 Paris, France. The growing responsibility of African women for protection of the African environment was the theme of a seminar held under UNESCO's auspices in Bujumbura, Burundi, 8-12 April 1991. A full account is contained in the periodical *UNESCO Sources*, May 1991, available by writing to the periodical at the UNESCO Paris address. Nos. 20, 23 - 26 and 29 of the IEEP « Environmental Education Series » (see *Connect*, September 1989) as well as the *EE Manual for Teachers* have been published in Chinese. They are available by writing to : Children & Youth Science Centre, China Association for Science and Technology, 54, Sanlihe Road, Beijing 100863, China.

Recent **UNEP** periodicals and publications of EE interest include : UNEP's periodic compendium of opportunities in environmental training, *ET Worldside* ; the organization's magazine, *Our Planet*, whose No. 2, 1991 issue contains a summary of UNEP's « State of the World Environment, 1991 » (also avail-able complete) ; and a book of particular value, as reference material, for educators and scientists on all Indian Ocean islands as well as along the East African coast : *Sea-Fishes of Mauritius and the South-West Indian Ocean* by Michael Atchia, Chief of UNEP's Environmental Education and Training Unit. The book examines in detail the Action Plan for the protection, management and development of the marine and coastal environments of the mentioned areas, initiated by UNEP and adopted by governments concerned. The periodicals and publications are available by writing to : UNEP, P.O. Box 30552, Nairobi, Kenya. These books have been published in the **INFOTERRA** « Exchange of Environmental Experience

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September 1991

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Language (s)..... No. of copies .....

Series » : (1) *Fire, Wood, Water : Reaping the Benefits* ; (2) *Drylands, Wetlands, Croplands : Turning Liabilities into Assets* ; and (3) *Coastal Management, Desert Afforestation and Ecological Farming : Striving for Sustainable Development*. For more information, write : INFOTERRA Programme Activity Centre, UNEP, same address in Kenya.

Environmental Education for a Sustainable Future is a folio-size, 46 p. report on the 1989 Conference of the North West Europe Committee of the **IUCN**'s Commission on Education and Training, which has been published by the Scottish Environmental Education Council, Department of Environment Science, University of Stirling, Stirling FK9 4LA, UK. The report contains the principle contributions of participants as well as workshop reports, notably that of the workshop on « Educating and Influencing Decision Makers. » ◆ **The Centre for Environment Education** of the Nehru Foundation for Development was established as a national institution in 1984 to play a pace-setting role in the India-wide effort to increase environmental awareness and education. The main activities are : development of EE materials ; EE teacher training ; networking and monitoring ; and evalution. Among the materials produced have been : *Joy of Learning, a Handbook of EE Activities*, for Standards 3 to 5 or primary level (developed for the National Council of Educational Reseach & Training – NCERT) ; and *Floods and Drought, an Educational Package*, for Standards 5 to 8 (secondary level), which is a part of an EE package that includes an 11-panel exhibit and a set of 48 tables on the subject, in English and Hindi. For more information, write : Centre for Environment Education, Nehru Foundation for Development, Thaltej Tekra, Ahmedabad 380 054; India. ◆ The Working Committee on Environmental Education convened by the Central Environmental Authority of **Sri Lanka**, has formulated proposals on the introduction of an EE core course at the university level and on the strenghthening of EE at pre-school, primary and secondary levels. The proposals are to be implemented by the end of 1992.

Canada's Green Plan is a folio-size brochure summarizing the most important environmental action plan ever produced in Canada. In addition to the $1.3 billion the Canadian Government already spends annually on the environment, the Green Plan commits an additional $3 billion in new funds over five years. It is a *comprehensive* five-year plan that deals with the environment as interrelated and whole. Among the goals are two of special EE interest : (1) to develop an environmentally literate society – one in which citizens are equipped with the knowledge, skills and values necessary for action ; and (2) to provide timely, accurate and accessible information to enable Canadians to make environmentally sensitive decisions. Copies of *Canada's Green Plan, a Summary* are available in English and French by writing to *Connect*, address on last page. ◆ Two comprehensive reports, in French, have been published on the state of EE at the primary and secondary levels in Quebec and a summary analysis of EE programmes at these levels : (1) *L'éducation relative à l'environnement à l'école primaire et secondaire au Québec – État de la situation* ; and (2) *L'EE à l'école primaire et secondaire au Québec – Analyse sommaire des programmes d'études*. For more information, write : Ministry of the Environment, Division of Education and Training, 5199, rue Sherbrooke Est, Montreal (Quebec) H1T 3X2, Canada.

A Sustainable Development Curriculum Framework for World History & Cultures, a folio-size resource book, has just been published by Global Learning, Inc., for the use of secondary social-studies teachers. It incorporates ecological concerns, economic development approaches and equity isssues ; and contains sample lessons, twelve infusion methods, resource lists, a guide to student action, etc. For availability, write : Global Learning, Inc., 1018 Stuyvesant Avenue, Union, NJ 07083, U.S. ◆ **Opening Doors for Science** is a booklet subtitled « Some aspects of environmental education and science in the national curriculum for (levels) 5 to 16 ». It is published by, and available from, Association for Science Education and the Nature Conservancy Council, College Lane, Hatfield, Hertfordshire AL10 9AA, U.K. ◆ The **Annual Review of EE, 90/91** in the U.K. has been published by, and is available from, the Council for EE, Faculty of Education and Community Studies, University of Reading, London Road, Reading RG1 5AQ, U.K. ◆ **Sacred Spaces** (Spazi Sacri) is the report (in English and Italian) of an international conference on « Beyond the Concept of Resources' Exploitation : Local Responsibility in the Management of a Universal Heritage (Assisi and the Mount Subasio Park) ». Write : Assisi Nature Council, Av. de Jaman 3, 1005 Lausanne, Switzerland. ◆ A **Programme Postgrade en Environnement** has been announced for the Fall of 1991 (to 1993) by the Institut de Génie de l'environnement, École Polytechnique Fédérale de Lausanne, 1015 Lausanne, Switzerland.

Ecological Living in Sweden – Ideas and Pratical Experience is available in English, French and Spanish by writing to : Svenska Institutet, Box 7434, S-103 91 Stockholm, Sweden. ◆ **Ihitza**, No. 1, 1991, a periodical in Basque and Spanish, has just been launched by the Centre for Environmental Education and Research, P.O. Box 4015, 48080 Bilbao, Spain. The Centre invites reports from teachers on EE projects and experiments as well comments and opinions. ◆ The British Field Studies Council announces financing of a project to establish an EE Centre in Hungary. The centre will be a model for the development of EE and a focus for developing EE resources and learning methods. For more information, write : Field Studies Council, Central Services, Preston Montford, Montford Bridge, Shrewsbury SY4 1 HW, U.K.

Human Ecology, Environmental Education and Sustainable Development, 215 pp., is Vol. 1 of the final report of the Ninth Commonweath Conference on Development and Human Ecology, held at the University of Edinburgh, 19-23 July 1989. Vol. 1 contains keynote addresses and other contributions on : the ecological role and activities of Commonweath and international organizations ; the role and the scope of human ecological principles ; programmes for human ecology and for the promotion of ecologically sustainable development. For availability, write : The Commonweath Human Ecology Council, 57/58 Stanhope Gardens, London SW7, U.K. ◆ **The Studies Centre of EE for the Mediterranean Area**, launched in Spring 1990, is taking the first steps towards its goal of environmental sensitivity to and protection of the Mediterranean area. For more information, write : Director, EE Studies Centre for the Mediterranean Area, loc. Ca' de Magri, 25087 Salo' (BS), Italy. ◆ An experimental programme of primary-school teachers and pupils of the **Sahel region** has been financed by the European Economic Community and organized and implemented by the Permanent Interstate Committee for Drought Control in the Sahel. For more information, write to the regional office : Institut du Sahel, B.P. 1530, Bamako, Mali.

The Indian Centre for Environment Education (CEE) is a national institute engaged in developing innovative programmes and materials to increase awareness about the environment. The CEE has just published *Essential Learnings in Environmental Education*, a 150-page data base for building EE activities and programmes. The publication is part of the Children's EE Television Project, a collaborative project between CEE and the State University of New York (U.S.). It lists the basic concepts of environmental literacy. For more information as well as the Annual Report, 1988-89, write : CEE, Nehru Foundation for Development, Thaltej Tekra, Ahmedabad 380 054. The Centre is planning to publish and distribute a Hindi edition of *Connect* in the near future. (This will be *Connect*'s seventh language edition. See box below.)

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Connect is also published in French as *Connexion*, in Spanish as *Contacto*, in Russian as *Kontakt*, in Arabic as *Arrabita* and in Chinese as *Lianjie*. Contents are exactly the same in all editions. *Connect* is free. Reproduction of its contents is not only permitted, it is solicited and encouraged.

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

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Incorporating Environmental Education into Industrial Education

The urgent need for the environmental education of future engineers, agronomists, industrial and agricultural technicians, specialized and skilled workers is no longer questioned. The what, where and how of environmental education (EE) in technical and vocational, i.e., industrial, education are the immediate concern. The difficulties are threefold: the vast variety of economic activities and environmental problems; the wide diversity in industrial education; and the fast-evolving content of EE in this area of education.

To begin with, students entering technical and vocational institutions may have a varying background in environmental concepts and principles. It is best to test the level of that competence and plan accordingly. But even where there has been a prior general environmental education, there must be appreciation of the more intensive type of environmental studies that are to be undertaken.

This means a fundamental change in both objectives and contents compared to older laissez-faire attitudes in both industry and the industrial education serving it. In the automobile industry, for example, training of motor engineers, manufacturing and maintenance technicians and garage mechanics that once ignored the environmental damage caused by vehicular emissions, now places more emphasis on developing fuel-saving engines, catalysators and other technologies for reducing harmful emissions. Similar developments have taken place in airplane engine design and production.

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Other industries have undergone the same social pressures to improve their process designs and production methods. Legislation has been enacted setting maximum emission limits and targets for iron and steel mills, pulp and paper factories, slaughterhouses, textile mills and other notoriously polluting branches of industry. Sharper controls have been introduced for emissions from domestic and industrial fuel-burning, heat-producing installations; and for industries using large quantities of water, so as to avoid contamination of rivers, lakes and groundwater. Chemical industries have been specially targeted, not to speak of nuclear energy installations.

A principal task of industrial education is to carry out a similar change in emphasis in curricula and programmes - to incorporate into the lesson plans for theoretical studies as well as practical instruction and work environmental aspects of the various courses of study and training. In this the educational institutions should take an initiating role rather than follow behind developments in the industry concerned.

While the technology to be covered will differ depending upon the level of studies and the field of activity concerned, a few basic objectives may be set out for such a change in the aims of technical and vocational education:

(1) to create awareness of and provide the required technological/economic knowledge and skills for dealing with the environmental problems relating to the principal *products* of the field of activity concerned: the possible elimination of such problems and the principal technical solutions to them;

(2) to create an awareness of and provide the required technological/economic knowledge and skills for identifying and dealing with the environmental problems arising out of the *production processes* which are current in the field of activity concerned, including: (a) recycling or direct use of process by-products; (b) waste disposal techniques, including separation technology applying to polluting elements in air, water and solid materials, storage and destruction of polluting and toxic agents and elements or, as the case may be, their transformation into non-toxic waste; (c) as appropriate, restoration techniques when the production process involves direct damage to landscape or other elements in the environment; this should include familiarization with standards applying to the industry concerned contained in legislation or recommendations by the competent authorities or other bodies;

(3) to create an awareness of and provide the required technological knowledge and skills - including safety-minded attitudes - for identifying and dealing with problems relating to safety and health of those involved in the *work process*, including possibilities for eliminating such environmental risks, or, as the case may be, protecting the individual or group concerned, also including the maintenance of such measures and the supervision of safe working methods.

Environmental education in industrial education should also cover further, in-service, adult education for a number of reasons:

Firstly, fast-moving technology makes it particularly important in the various fields of scientific and technologic activity. Each field has had its specific impact of change, which, in turn, often has meant a changing impact on the environment, in the workplace and beyond. Many agricultural and industrial undertakings are employing means of production today which did not exist only a few decades ago, and which involve environmental risks different from those they learned to master during their initial training and education.

Secondly, there must be a certain correlation between what older generations of technical personnel know and what those now in initial technical and vocational education are learning. If this is not achieved, current conflicts between older and younger generations at the workplace will be further aggravated.

Thirdly, older generations of technical personnel have often had an education and training in which environmental aspects were largely neglected. What they need is not merely an updating, but in many cases a retraining aiming at changes in attitudes as well as in the emphasis to be given to different aspects in their work affecting the environment.

The prime target groups in further EE for adults are those who are responsible for products and processes and for the maintenance of appropriate procedures at work: the managers at the various levels, including supervisors in production; specialists in research and development; maintenance personnel, including those responsible for repair and maintenance after sale, (e.g., garage workers). Engine tuning, repair and maintenance of petrol-supply systems and catalysators are examples of recent technological change requiring further EE training of those concerned.

Other targets for further EE are the training and personnel-development officers and the safety engineers and safety representatives of workers' unions. In industries with dangerous substances used in production the target groups are normally even wider. They include, for instance, tank-storage personnel, transport workers and others, who may handle such substances in their work and who, if their job is not done properly, may cause irreparable environmental damage.

EE Curriculum for Industrial Schools

With the collaboration of the Colombo Plan Staff College for Technician Education (Philippines), a brochure has been prepared on an environmental education curriculum prototype for industrial schools at pre-university level, in the context of activities of the UNESCO-UNEP International EE Programme. The brochure is accompanied by another on an EE curriculum prototype for pre-service teacher education for industrial schools. Both brochures have the objective of renovating industrial school curricula and teacher education vis-a-vis environmental education simultaneously. Proposed as prototypes, both curricula, when implemented, require adaptation to the needs of students, the current school programme, the environmental situation and the pre-service and in-service needs of the teachers.

The Table of Contents of the first brochure *(An EE Curriculum Prototype for Industrial Schools)* best indi-

cates the scope of its coverage. It includes chapters on general and specific objectives of EE in technical and vocational education (TVE) and situational analysis in terms of traditional aims and objectives of TVE, types and levels of courses, survey of the existing situation of EE in TVE and teaching/learning, resources and evaluation methods.

Chapters follow on curriculum options (models and structures); EE content (essential components, suggestions for courses and syllabus outlines, EE components for agricultural schools); effective teaching/learning methods and strategies; instructional resources (teaching education and training, materials and media, community resources, system management); evaluation (EE, students, instruments, attitudes and values, programme designs and methodologies).

A bibliography closes the brochure.

EE Curriculum for Pre-Service Teacher Training

Similarly the Table of Contents of the second accompanying brochure *(An EE Curriculum Prototype for Pre-Service Teacher Education for Industrial Schools)* best indicates its scope and coverage. Chapters begin by discussing objectives and analysis of the existing situation (current TVE curriculum, incorporation of EE content, scope and sequence design, general and specific objectives for pre-service training of TVE teachers). They follow with details on educating teachers for EE content (core content, content for integration, content for specialized subjects); for EE pedagogy (content for EE pedagogy, exemplary lesson plans for EE, outdoor education for EE); for values education (objectives, content, implementation strategies); and evaluation of the pre-service training of teachers for EE (programme evaluation, effectiveness of programme, efficiency of programme, evaluation of EE techniques, validity and reliability).

(The lead article above is based on EE Series No. 24, *Environmental Education in Technical and Vocational Education*, which exists in English, French, Arabic and Spanish. That publication and the two brochures on EE curricula prototypes, described in the second part of the lead article and in English only currently, are available to institutions by writing to *Connect*, address on last page.)

EE Field Reports

Sustainable Development A Challenge and Responsibility

Responding to the fact that environmental concerns are so closely related to *surveying*, the International Federation of Surveyors (FIG) has issued a statement of commitment, finalized and adopted at the FIG meeting held in Beijing, China, 23 May 1991. It is a model of its kind for *all specialists* whose work involves the environment.

The statement, prepared with the support of the United Nations Environment Programme (UNEP), seeks to ensure that the surveyors' professional skills are used to promote environmentally sound planning and management of natural resources and human settlements. Accordingly, FIG affirms that "environmental issues should therefore figure prominently in the education of surveyors and that universities should be encouraged to provide the appropriate courses." Meanwhile, the International Federation of Surveyors commits itself to give a high priority to environmental concerns in its work and urges the same attitude be adopted by its national member associations.

As for "the individual surveyor's commitment," the FIG statement continues, " it shall always require :

- an assessment of the environmental consequences of professional activities in a responsible way ;
- constant efforts to secure a recognition of environmental planning and management aspects in the fulfilment of any project, and to disseminate environmental information within the surveyor's field of expertise ;
- a prompt and frank response wherever possible to public concerns on the environmental impact of projects, including when appropriate the stimulation of environmental actions ;
- the utilization or recommendation of the engagement of additional expertise whenever the surveyor's own knowledge of particular environmental problems is insufficient to the particular task ; and
- the improvement of environmental standards, meticulously observing statutory requirements on environmental issues."

Among the Federation's own assumed responsibilities of particular interest to environmental educators are to :

- provide opportunities for expanding the education of the professional surveyor to include understanding of and solution to environmental problems ;

- include, wherever appropriate, environmental issues as an important topic at conferences and on other occasions and encourage national member associations to do likewise ; and

- encourage discussions on environmental issues and the surveying profession by national authorities, universities, schools and research institutes in order to exert an influence on programmes and syllabi.

Definition of a surveyor: a professional person with the academic qualifications and technical expertise to practise the science of measurement ; to assemble and assess land- and geographic-related information ; to use that information for the purpose of planning and implementing the efficient administration of the land, the sea and structures thereon ; and to instigate the advancement and development of such practices. In their activities, surveyors take into account legal, economic, social and *environmental* aspects affecting each project.

(For a copy of the FIG statement in English, French and German, or for more information, write to : FIG Bureau, P.O. Box 184, SF-00101 Helsinki, Finland.)

International Training Course on Environmental Education for Educational Planners and Administrators (Continued)

India's National Institute of Educational Planning and Administration (NIEPA) has held the latest of its series of international training seminars on environmental education for educational planners and administrators at an all-Indian level on this occasion, 29 April - 3 May 1991, in New Delhi. These training programmes have been organized by NIEPA in collaboration with the UNESCO-UNEP International Environmental Education Programme (IEEP) since 1985. The first was a consultative meeting on the training of curriculum developers, teacher educators and educational planners in EE. (See *Connect*, March 1985)

In 1988, it was decided jointly by NIEPA and IEEP to incorporate a one-week EE training course into NIEPA's annual International Diploma Programme in Educational Planning and Administration, which is conducted for educational personnel of the Third World. This was done consecutively in 1989 and 1990 at the international level. (See *Connect*, June 1990) The objective, as before, was to establish a common platform on which to work out strategies for incorporation of EE in the training of educational personnel. Some fifty participants from the various regions of the Third World benefited from these training seminars.

Encouraged by the international reception and success of the EE course, NIEPA undertook the all-Indian seminar, spring 1991, in cooperation with IEEP and scheduled the follow-up of four sub-national workshops aimed similarly at orienting and training educational planners and administrators of these areas in EE. The programme was designed around three major themes : (1) the interface of environment and development; (2) issues in EE ; and (3) methods and strategies in the implementation of EE. Two working groups developed, respectively, modules on these three themes as well as action plans for the follow-up sub-national meetings.

(Reports on the three seminars mentioned are available in English to institutions by writing to *Connect*, address on last page.)

Incorporation of Environmental Education into Primary-School Curricula

An international training seminar on the incorporation of environmental education into primary-school curricula was held in Valletta, Malta, 27-31 May 1990. The training seminar was organized by the Foundation for International Studies of the University of Malta in cooperation with and in the framework of the UNESCO-UNEP International EE Programme (IEEP).

The objectives of the seminar were : (1) to discuss guidelines and strategies for the incorporation of EE into primary education ; (2) to examine and evaluate revision of the *EE Prototype Curricula for Primary Schools* developed under the IEEP on a subregional basis and to explore possibilities for their national adaptation ; and (3) to enhance the exchange of information and experience through the preparation and presentation of country reports with special emphasis on primary-school curricula in EE in participating UNESCO Member States.

Forty-one participants from twenty-one Member States attended the five-day seminar. A combination of plenary sessions and group workshops was employed to achieve the objectives.

Infusion emerged as the favoured model for incorporating EE into primary education. Follow-up training workshops in the regions concerned (Arab States, ASEAN, Caribbean and South Asia) were suggested to familiarize key educators with the prototypes and their local adaptation. Sharing of country reports (see Objective 3, above) revealed that : (1) various EE activities were taking place in all participating Member States and in several, for example, Malaysia, India and Sri Lanka, there has been

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outstanding progress in establishing EE mandates and curriculum development ; (2) a number of countries have legislated EE in the formal school system ; and (3) institutionalizing continuing dissemination of environmental and EE information be emphasized through such mechanisms as national EE units. Recommendations were made in accordance with these conclusions of the training seminar.

(A Final Report of the Maltese international training seminar has been published, which is available in English to institutions by writing to *Connect*, address on last page.)

Teacher's Manual: Incorporating EE into Primary Schools

The Faculty of Education of the University of Malta has prepared and published, in English, an 81-page illustrated, folio-size brochure, titled: *Incorporating Environmental Education into the Primary-School Curriculum : A Teacher's Manual.* The manual contains : EE concepts, goals and objectives; teaching methods, activities and components for primary-school textbooks and syllabi ; EE evaluation, sample activities from Year 1 through Year 6 and a glossary. The manual is available to appropriate institutions by writing to: Faculty of Education, University of Malta, St. Paul Street, Valletta, Malta. (Reminder: Nos. 5, 6 and 8 of the IEEP's "EE Series" are titled respectively: *EE Module for Pre-Service Training of Teachers and Supervisors for Primary Schools : EE Module for In-Service Training of Teachers and Supervisors for Primary Schools;* and *An EE Approach to the Training of Elementary Teachers : A Teacher-Education Programme.* These are available to institutions, as are other IEEP publications, by writing to *Connect*, address on last page.)

Environmental Education Takes off in Turkey

Environmental education is developing by leaps and bounds in Turkey in the wake of a national seminar for this purpose, held in Ankara, 7-8 June 1990 (see *Connect*, September 1991). In February of this year, for instance, a second EE seminar took place, whose participants were from both the private and public sectors – government officials and officials of nongovernmental organizations, local authorities, such as village muhtars as well as lay community leaders.

Not least, a Ministry of the Environment has been created for the first time since the foundation of the Turkish Republic, and a minister appointed. Article 56 of the nation's Constitution indicates the direction being taken. "Everyone," it states, "has the right of living in a healthy and harmonious environment." Indeed, there is a formal Turkish proposal that the United Nations proclaim a "Bill of Environmental Rights." (Why not at the UN Conference on Environment and Development, to be held in Brazil in 1992?)

Basic in the national EE action plan developed at the first seminar is the principle that environmental education is life-long and for *everyone*, in school and out, from decision maker to hotel keeper, fishermen to tradesmen, students and teachers, hunters and farmers. For this, on-the-job training programmes are already underway as well as curriculum development activities for all levels of the formal educational system – pre-school, primary, secondary and higher education.

A scheme of "Specially Protected Areas" has been launched simultaneously to protect those regions of Turkey which are particularly rich in natural, historical and cultural values. The environmental education of the personnel involved has been declared a priority. Here a German-Turkish technical cooperation programme has recently, and importantly, come into effect. Additionally, the German Development Credit Organization is concentrating support for the "Specially Protected Area" at Koycegiz-Dalyan, one of natural beauty spots of Turkey, chosen to be a model for the development of other SPA's.

(For more information, write to : APSA, Ministry of the Environment, Koza Sokak 32, G.O.P. 6700, Ankara, Turkey.)

EE News and Publications

Environmental Education and Sustainable Development is a 538-page, hard-cover book published by the Indian Environmental Society with the financial support of the **UNESCO-UNEP International EE Programme.** The publication contains important papers presented at the Third International Conference on Environmental Education, held in Panjim, Goa, India, 3-7 October 1989. Nearly 500 delegates from many countries of the world attended. Sessions, and papers, were broadly divided into areas of environmental concern relating to : (1) human settlements and urbanisation ; (2) land resources ; (3) ocean environment ; (4) energy and environment ; (5) biosphere reserves ; (6) environmental law; and (7) environment information technology. The publication is available in English to institutions by writing to : *Connect*, address on last page ; or to Indian Environmental Society, U-112 A,

Vidhata House, Vikas Marg, New Delhi 110002, India. ◆ *The Earth is Our Home* is a 112-page, soft-cover work published by the Byelorussian National Committee for the **UNESCO MAB Programme.** Its subtitle is : A Set of Environmental Education Teaching/Learning Materials. Similarly, the Final Report of a subregional conference on "Today's Ecological Problems and Improvement of Environmental Education," held in the Berezinsky Biosphere Reserve, 15-18 October 1990, has now been published and made available in English by the Byelorussian National MAB Committee. Both publications were financially supported by MAB and IEEP. Both are available in English by writing to : *Connect*, address on last page.

Issue No. 3, 1991, of *Our Planet*, the magazine of the United Nations Environment Programme **(UNEP)**, contains an article of special EE interest : "The Global Environment Facility : US$1 billion to invest in the health of the planet." The magazine appears in English, French and Spanish editions. Another periodical of special EE interest is issued by the Environmental Education & Training Unit of UNEP, titled *ET Worldwide*, a periodic compendium of opportunities in environmental training. All five regions of the world are covered. For both publications, write to : UNEP, P.O. Box 30552, Nairobi, Kenya. *Climate Change and Energy Efficiency in Industry* is a new publication which has been prepared by a group of experts from the International Petroleum Industry Environmental Conservation Association in cooperation with the UNEP Industry and Environment Programme Activity Center. The publication aims at informing industrial managers and government officials of the economic benefits to industry of more efficient energy generation and use. For more information, write : Director, UNEP-IE/PAC, Tour Mirabeau, 39-43 Quai Andre Citroen, 75739 Paris, Cedex 15, France. ◆ *Earth Summit News* has been established to regularly provide news of preparations for the UN Conference on Environment and Development **(UNCED)**, to be held in Rio de Janeiro, 1-12 June 1992. Issue No. 1, March 1991, describes the documents being produced and the people involved. Write : UNCED Secretariat, 160 route de Florissant, Case Postale 80, CH-1231 Conches, Switzerland.

Caretakers of the Environment International **(CEI)** is a network of secondary-school teachers and students in some 45 countries which was established in 1986 and now publishes *The Global Forum for Environmental Education.* For more information, write: CEI Secretariat, Nassauplein 8, 1815 GM Alkmaar, Netherlands. ◆ **The Patrick Geddes Centre for Planning Studies** of the University of Edinburgh initiated a Summer School for international studies with a meeting on "Cities in Our Future," 8-19 July 1991. The Centre's projects include archives, conservation, exhibitions and networking internationally on the subject of human settlements and ecology. Write : Patrick Geddes Centre, University of Edinburgh, Outlook Tower, Castlehill, Edinburgh, U.K. ◆ The Umweltbundesamt (Federal Environmental Agency) of Germany has published a 49-page, folio-size booklet on **"International Environmental Protection Study Courses,"** in English, of 23 countries, from Austria to the U.S.A. Write : Umweltbundesamt, Bismarckplatz 1, D-1000 Berlin 33, Germany.

The September 1991 issue of *World Development*, the periodical of the UN Development Programme **(UNDP)**, contains a special report on "Reversing the Flow – The North Taps into the South for New Ideas and Technology." For instance : "Looking ahead, alcohol-powered vehicles, a common sight for the past 15 years in Brazil, could become prototypes for Northern car manufacturers by the end of the century. Experiments in solar energy and biomass recycling in developing countries are now extremely relevant to industrialized nations determined to reduce their dependence on imported oil." Write : UNDP, Division of Information, Room DC1-1900, One UN Plaza, New York, N.Y. 10017, U.S. ◆ Issue No. 2, 1991, of *World Health Forum*, an international journal of the World Health Organization **(WHO)**, includes a detailed report on a round-table of experts concerning "preparations now to counter environmental damage on health." WHO has also published (1) a brochure on *Environmental Health in Urban Development*, available in English and French and soon in Spanish; and (2) *World Health Organization Healthy Cities Project: A Project Becomes a Movement*, review of progress made from 1987 to 1990, folio-size, illustrated in colour, available normally by purchase. For more information, write: WHO, Distribution and Sales, 1211 Geneva 27, Switzerland.

The International Atomic Energy Agency **(IAEA)** has just published *The International Chernobyl Project*, the proceedings of an international conference, held in Vienna, 21-24 May 1991, expressly for presentation and discussion of the Agency's Technical Report on the Chernobyl Disaster. The Report, which has also been published, assesses the radiological and health situation in the affected areas and evaluates the protective measures taken. Additionally: The *IAEA Yearbook* for 1991 has just been published, as well as the Agency's *Highlights of Activities*, *Film and Video Catalogue* and *Bulletin*, Nos. 2 and 3, which deal respectively with "Radiation and Health" and "Electricity and the Environment." For more information, write : Division of Publications, IAEA, Wagramerstrasse 5, P.O. Box 100, A-1400 Vienna, Austria.

The Organization for Economic Cooperation and Development **(OECD)** has issued its bilingual (English and French) *OECD Environmental Data - Données OCDE sur l'environnement – Compendium 1991*, 337 pp. Additionally : the OECD has published a 146-page report on "Environment, Schools and Active Learning," based on Member-State examples ; a 133-page brochure, *Environmental Labelling in OECD Countries;* and its periodical, *The OECD Observer*, October/November 1991, which contains an article on "Energy, Environment and Efficiency." For more information, write : OECD Publications, 2 rue André-Pascal, 75775 Paris Cedex 16, France. ◆ Note : the correct address for the Commonwealth Human Ecology Council **(CHEC)**, which publishes a periodical *Journal*, among other things of EE interest, is : 57/58 Stanhope Gardens, London SW7 5RF, U.K. We are advised that a diploma course listed in *Connect*, called "Study Abroad," has long since been discontinued.

Transforming Technology : An Agenda for Environmentally Sustainable Growth in the 21st Century. 40 pp., folio-size, is available in English from: **World Resources Institute,** 1709 New York Avenue, N.W., Washington, D.C., U.S. ◆ *Junior High Environmental and Outdoor Education*, distributed by the Calgary Board of Education, 515 Macleod Trail S.E., Calgary, Alberta, Canada T2G 2L9, describes the rationale and philosophy of an EE course at this level. ◆ An illustrated report on *A Training Seminar for European Rangers, Wardens and Interpreters, 1990* may be purchased from : Losehill Hall,

Peak National Park Centre, Castleton, Derbyshire, S30 2WB, U.K. ◆ A Master of Science programme in "Environmental Sanitation" is being conducted by the Centre for Environmental Sanitation, State University of Ghent, J. Plateaustraat 22, B-9000 Ghent, Belgium. ◆ The Autumn/Winter 1991/92 of Natural History Book Service Ltd, 2 Wills Road, Tornes, Devon TQ9 5XN, U.K., is devoted entirely to books and other printed materials on "*Environment.*" ◆ The Baltic Sea Project newsletter contains news and information about environmental activities of educational organizations of the area and their connections to other areas of the world. The BSP operates in conjunction with the UNESCO International Network for Information in Science and Technology Education. For more information, write : BSP Newsletter, Hakaniemenkatu 2, 00530 Helsinki, Suomi-Finland.

Publications of the IEEP (Continued)

The September and December 1989, March 1990 and June 1991 issues of *Connect* contained lists of publications of the UNESCO-UNEP International EE Programme (IEEP) which had appeared until those dates. The list below continues and updates the previous lists and carries the sequential numbering. All publications, as before, are available to institutions involved in environmental education by writing to *Connect*, address on last page.

Basic Documents

19. An Environmental Education Proposal for the Pan-Amazon. Final Report of the Pilot Project for Incorporation of Environmental Education in the Curricula of Member Universities of UNAMAZ (1991), 57 pp. As the First Phase Report (See No. 18), this second or final phase report was prepared by the Association of Amazonian Universities (UNAMAZ) for IEEP. Contents are devoted to : Treatment of the Environmental Dimension; the Theoretical Question ; Proposals (for teaching ; undergraduation ; a political-institutional task ; post-graduation: a proposal of integration and formation of cadres; extension, or the interaction with society ; and research, or the support of academic actions) ; References (bibliography) ; and Appendices (instrument of data collection and proposal of Amazon Information System - SIAMAZ). (English)

20. Environmental Education: A Curriculum Prototype for Industrial Schools (1991), folio-size, 62 pp., prepared for IEEP by faculty members of the Philippine Colombo Plan Staff College for Technician Education. The contents are described in the second part of the lead article of this issue of *Connect* (December 1991). (English)

21. Environmental Education : A Curriculum Prototype for Pre-Service Teacher Education for Industrial Schools (1991), folio-size, 92 pp., also prepared for IEEP by the Philippine Colombo Plan Staff for Technician Education and whose contents are similarly described in the second part of the lead article of this issue of *Connect* (December 1991). (English)

Final Reports

50. *Final Report.* **Estrategia Nacional en Educacion y Formacion Ambiental, 1990-1999.** National Seminar on Environmental Education and Training, Caracas, Venezuela, 25-27 October 1989. This seminar/workshop was organized in the context of the IEEP by the Department of Environmental Education of Venezuela's Ministry of Environment and Renewable Natural Resources. The meeting's theme was "Orientations, objectives and actions for a national strategy in environmental education and training. The Final Report of the meeting contains both the proceedings and the results. (Spanish)

51. *Final Report.* **Consultation Meeting on Developing Guidelines for Evaluating Environmental Education Training Activities, New Delhi, India, 18-23 April 1990.** This consultation meeting was organized by the Department of Education in Science and Mathematics of India's National Council of Educational Research and Training (NCERT) in cooperation with the UNESCO-UNEP International EE Programme (IEEP). The report on the proceedings includes : (1) a review of past EE training activities internationally ; (2) strategies for future actions; and (3) recommendations. Principal speeches are included in the appendices. (English)

52. *Final Report.* **International Training Seminar on Environmental Education for Educational Planners and Administrators, New Delhi, India, 22-26 April 1990.** This international training seminar was organized by India's National Institute of Educational Planning and Administration in cooperation with the UNESCO-UNEP IEEP. The international training seminar, or course, is a continuation of a programme begun in 1985. (See Final Report No. 17 and p.4 of this issue of *Connect.*) The report on this training seminar contains : (1) the proceedings of the course ; (2) a description of the IEEP ; (3) a consolidated summary of country reports; (4) a section on environmental education and educational planning ; and (5) conclusions. There are over 100 pages of appendices. (English)

53. *Final Report.* **Seminar to Draw Up Strategies and Action Plan for the Development of Environmental**

Education in Ghana. This seminar was organized by Ghana's Environmental Protection Council in cooperation with the UNESCO-UNEP IEEP, Accra, Ghana, 6-10, August 1990. The Final Report of this seminar/workshop contains, *inter alia*, a summary of EE views, discussions of EE objectives, strategies and actions in the formal and nonformal education sectors and at the primary, secondary and tertiary levels. There are almost 100 pages of annexes, including the working document for the seminar/workshop. (English)

54. *Final Report.* **Third Interagency Consultation Meeting on Cooperation and Coordination in Environmental Education, Paris, France, 6-8 November 1990.** This consultation meeting (the third of its kind) was organized by UNESCO in the framework of the IEEP (see *Connect*, December 1990). The agencies participating were : United Nations Environment Programme (UNEP), Food and Agricultural Organization (FAO), International Labour Office (ILO), UN Industrial Development Organization (UNIDO), World Health Organization (WHO), World Meteorological Organization (WMO), World Bank, International Council of Scientific Unions (ICSU), International Union for the Conservation of Nature and Natural Resources (IUCN) and the host agency, UN Educational, Scientific and Cultural Organization (UNESCO). The Final Report contains the presentation of the EE programme, actions and plans of each participating body in cooperation and coordination with the others, particularly with the UNESCO-UNEP International EE Programme. (English)

55. *Final Report.* **All-India Seminar on Environmental Education, for Educational Planners and Administrators, New Delhi, India 29 April - 3 May 1991.** This seminar is, in effect, a continuation of a series of international training courses in EE for key educational personnel, organized by India's National Institute of Educational Planning and Administration, this time at an all-Indian level. (See p. 4 of this issue of *Connect*). The Final Report describes the series of training courses and the results of two subdivided working groups of the 1991 seminar, which were organized around these themes : (1) environment and development, EE issues, methods and strategies, and (2) action plans for four follow-up regional workshops. (English)

56. *Final Report.* **International Training Seminar on the Incorporation of Environmental Education into Primary-School Curricula. Valletta, Malta-27-31 May 1991.** This training seminar was organized by the foundation for International studies of the University of Malta in cooperation with and in the context of the IEEP. (See p. 4 of this issue of *Connect.*) The Final Report contains the objectives, proceedings, conclusions and recommendations of the seminar as well as an elaboration on EE in the primary school, country reports and appendices of principal addresses, summaries of EE curricula prototypes, etc. (English)

57. *Final Report.* **Seminaire sous-regional de formation sur l'education relative a l'environnement et le developpement en Afrique centrale, Kinshasa, Zaire, 24-28 June 1991.** This subregional seminar, or workshop, on education concerning environment and development in Central Africa, was organized by the Zaire Federation of UNESCO Clubs and Associations with the collaboration of the IEEP. The Final Report contains an account of the objectives and proceedings of the seminar as well as the results of two working groups, which revolved around : (1) environment and economic development ; and (2) modalities for incorporating an environmental dimension into the training of educational planners, administrators and teachers at the secondary level. (French)

Special late notice : UNEP in cooperation with Canon Inc. is sponsoring a competition of environmental photographs from professionals and amateurs with prizes for the best. A children's category has also been established. Send photographs before March 1, 1992 to : UNEP Photographic Competition, c/o Dentsu Burson-Marsteller, Sogo Kojimachi No. 3 Building, 6-Kijomachi 1-chome, Chiyoda-ku, Tokyo 10, Japan.

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

Vol. XVII. No. 1. March 1992

The International Environmental Education Programme 1992-1993

The International Environmental Education Programme (IEEP), launched by UNESCO jointly with the United Nations Environmental Programme (UNEP), in 1975, is now entering its eighth biennial phase, 1992-1993.

This new phase of IEEP was approved by the 26th General Conference of UNESCO and by the 16th Session of the Governing Council of UNEP.

The UNESCO General Conference has again given priority treatment to the development of environmental education in the Organization's support of environmental protection, the rational use of natural resources and sustainable development. UNESCO, accordingly, is taking an active part in the preparation of the United Nations Conference on Environment and Development (Brazil, June 1992) and in its follow-up.

UNESCO's approved *Programme and Budget for 1992-1993* includes under Programme I.2, "Education for the twenty-first century," enhancement of "humanistic and cultural values, international and mutual understanding, attitudes, as well as *a new behaviour towards the environment...*" Similarly, under Programme II.2, "Environment and natural resources management," ensurance is pledged of "the coordinated contribution of UNESCO to the major endeavours of the United Nations system in the field of environment and development, and to international programmes concerning the various issues connected with global change," as well as the Organization's contribution "to improved decision-making by preparing and disseminating scientific information on complex environmental issues of global relevance, in cooperation with other organizations."

Most specifically, under the same Programme (II.2), "with a view to improving *environmental education and information,*" the following is planned and budgeted for 1992-1993:

- to implement the International EE Programme in co-operation with UNEP, and to promote the development of environmental education and its incorporation into all types and levels of education, with emphasis on the production of innovative educational material;
- to heighten awareness of global environmental issues with emphasis on the relationship between environment and development;
- to develop research and experimentation in environmental education and information in various cultural and social contexts, through pilot projects, training activities and suport for governmental and non-governmental organizations;
- to foster the collection, review and dissemination of information and research findings on environmental issues, mainly throught the various information means of UNESCO's intergovernmental environmental programmes, and through the publication of the journal *Nature and Resources* and the [EE] newsletter *Connect.*

UNEP'S Governing Council at its 16th Session likewise stressed environmental education, training and information in its decisions for the next biennium period. The programme strategy established involves: (1) increase to 100 the number of nations that will have incorporated EE into their policy, plans and educational systems, both formal and nonformal; (2) provision of assistance in the training of some 20,000 nationals from developing countries in different fields of environment and natural resources management; (3) cooperation with some 30 selected countries in launching specific information campaigns aiming to increase environmental awareness. For the achievement of its environmental education and information goals, UNEP will continue to support and cooperate with UNESCO in the joint International Environmental Education Programme (IEEP).

The new phase of the IEEP is accordingly based primarily upon UNESCO's Programme and Budget 1992-1993 (as indicated above), UNEP's Programme Budget document for 1992-1993 and the decisions of UNEP's Governing Council (as outlined).

Concretely, the *short-term objectives* of Phase VIII of the IEEP have been defined as:

- to bring all developing countries to a state whereby they will have incorporated an environmental dimension into one or more levels of their educational systems;
- to assist at least 20 countries which have already incorporated formal and/or nonformal environmental education (EE) into one more levels of their educational systems to (1) renew their curricula; (2) update their teaching/learning materials; and (3) further train and re-train their teaching personnel;
- to strengthen environmental education on a subregional basis through the development and dissemination of model (prototype) curricula outlines for the different levels and forms of formal and nonformal education;
- to induce and help Member States to each produce a "National Strategy for Environmental Education and Training for the 1990s" (based upon the "International Strategy," but reflecting national policies and needs. (See *Connect*, September 1987, on the "International Strategy" adopted by the International EE Conference, Moscow, 1987).

IEEP Activities, 1992-1993

Global activities, as before, at international and regional levels funded by the IEEP, will be implemented by UNESCO (Paris, France) with the direct and active collaboration of UNEP (Nairobi, Kenya). This joint collaboration will enable the IEEP to reach a variety of focal points at national levels, in particular those concerned with *education* as well as those concerned with the *environment.* There are four core domains of planned action:

Teacher Education and Meetings: ten pilot projects on the incorporation of EE into primary-school-teacher education for those Member States which have not already done so; four EE training workshops for educational planners and administrators aimed at the development of national strategies and plans for achieving *environmental literacy for all;* a fourth Interagency Consultation Meeting among UN agencies and relevant nongovernmental organizations (NGOs) on cooperation and coordination in environmental education and information; international training seminar on the incorporation of EE into general university education; and a Global Forum on Environmental and Development Education, to be cosponsored in 1993 by UNESCO and UNEP in cooperation with concerned NGOs.

Development of Curricula and Teaching Materials: five revised and updated versions of teaching/learning modules published in the IEEP's "EE Series", six new teaching/learning EE modules on environmental problem areas of greatest concern; six prototype EE curricula for all forms and levels of education; ten documents on EE topics given priority by UN Conference on Environment and Developement (June 1992, Brazil); printing and dissemination of experimental children's versions of EE modules on major environmental problems.

Research and Experimentation: development of three prototype interdisciplinary EE courses for general university education; five pilot projects and adaptation and

testing of EE materials in UNESCO's "Associated Schools"; pilot project on the development of evaluation tools for teaching/learning in environmental education, seven pilot projects on the incorporation of EE into general university education, support to NGOs, including the preparation and organization of a Conference on Environmental Ethics, cosponsored by UNESCO and UNEP in cooperation with NGOs as well as with the Commonwealth Human Ecology Council (CHEC); consultation among UNESCO, UNEP and selected universities on the establishment of one or more "Chairs in Environmental Education" in university-level educational institutions.

Information on Environmental Education: worldwide dissemination of all IEEP materials; completion, printing and dissemination of a survey to identify to what extent countries in developing regions are actively incorporating an EE dimension into their education systems (1) formally (primary, secondary and tertiary, technical and vocational) and (2) nonformally (literacy, adult and other out-of-school educational activities); printing and dissemination of an illustrated booklet, in English, on the achievements of IEEP since its inception in 1975, presenting the International EE Programme and its services to decision and policy makers and other influential persons; expanded dissemination of the quarterly EE newsletter *Connect* in the six official languages of UNESCO as well as in Hindi and Ukrainian (and, possibly soon, Japanese and German); development of IEEP's computerized network and networking.

Subregional and national activities, which will be decentralized to UNESCO's Regional Offices for Education and whose core domains are:

Teacher Education: four subregional training workshops on EE for key personnel in basic education, including literacy programmes; fifteen subregional/national pilot projects on the incorporation of EE into primary-school teacher education and basic education.

Development of Curricula and Teaching Materials: technical assistance and consultancy services to Member States for the development of environmental education and training national strategies, based on the "Internatinal Strategy for the 1990s"; support to national institutions for the local adaptation of IEEP materials.

Information on Environmental Education: continuing the preparation and updating of regional rosters of EE consultants; dissemination of IEEP materials. Whenever possible, UNESCO and UNEP Offices will provide the IEEP Secretariat with new and/or updated information on the EE needs and activities in their regions (either directly, in the case of UNESCO's Regional Offices, or indirectly through UNEP Headquarters, in the case of its Regional Offices).

Lastly, as before, technical and other assistance will continue to be available to Member States for the promotion and strengthening of environmental education, training and information at the national and subregional levels.

EE Field Reports

Council of Europe: Member and Other States Should Incorporate EE into their Educational Systems

The Council of Europe, which includes the twelve Member States of the European Community, has issued a recommendation on environmental education of supreme importance to educational planners, developers and decision makers (not to mention all environmental educators). The recommendation is a model for other regions. *Connect,* consequently, is reprinting the full text, as presented by the Council, for world-wide reference and use:

Recommendation No. R(91)8
on the development of environmental
education in school systems
(adopted by the Committee of Ministers
on 17 June 1991 at the 460th meeting
of the Ministers' Deputies)

The Committee of Ministers, under the terms of Article 15 (b) of the Statute of the Council of Europe,

Having regard to the Stockholm Declaration on the Human Environment and the World Charter of Nature;

Having regard to the conclusions of the UNESCO/UNEP Intergovernmental Conference in Tbilisi (1977), the Moscow International Congress (1987) and the various other international events and programmes on environmental education [such as IEEP];

Having regard to the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention);

Having regard to Resolution (71) 14 on the introduction of the principles of nature conservation into education, and considering its updating to be necessary in order to:

- take account of the aggravation of certain phenomena such as the population explosion and the appearance of new problems such as climatic changes and depletion of the ozone layer;
- ensure that educational curricula deal more fully with environmental problems and the risks facing the environment and society;
- reduce the discrepancy between advances in science and technology and their coverage by schools;
- include in curricula the increasingly numerous sources of information available to pupils;

Bearing in mind the revision of proposals made by the participants in the 38th Council of Europe Seminar for Teachers (Donaueschingen, November 1987);

Endorsing the conclusions of the report entitled "Our Common Future" by the World Commission on Environment and Development (Brundtland Report).

Aware that the state of the environment has reached a critical level;

Convinced that the present situation is the result of the juxtaposition of two phenomena, viz., a dramatic increase in population and the globalisation of industrial society;

Underlining the planetary dimension of environmental problems and the need to promote a resources management model that takes more account of the interdependence of individuals and nations;

Noting that the tremendous development of science and the increase in technological power necessitates on the part of individuals an increased sense of responsibility for the environment, humanity's common heritage;

Recognising that people have the right to a healthy and ecologically balanced environment, on whose quality their dignity and well-being depend;

Convinced that environmental education is one of the best ways of restoring a balance between the individual and nature and guaranteeing a rational and reasonable management of planetary resources in a context of sustainable development;

Considering that the attention given to environmental protection in educational curricula should be increased and that appreciation of and respect for the environment should be basic principles of the teaching of all subjects;

Convinced that education should consist not only in developing a knowledge and understanding of ecology and biology but also in encouraging more positive individual attitudes towards nature and the environment;

Wishing that education be based on an ethical approach that is essential for the judicious use of knowledge;

Being aware of emotional and affective relationships with nature and the environment;

Emphasising that environmental education in schools should not be separated from that provided in the home, in youth organizations and through out-of-school activities,

Recommends that the governments of Member States:

- bear in mind, when drawing up or revising their environmental education policies, the guidelines set out in the Appendix [below] to this Recommendation;
- ensure that teachers have an opportunity of revitalising and diversifying classroom activities and basic learning processes by providing them with resources enabling them:
  - to use and develop active and participatory teaching methods aimed at the discovery and enhancement of the environment;
  - to use out-of-school facilities for environmental education;
  - to use the new technologies (e.g., audio-visual media, computer facilities and telematics) for the purpose of visualising and demonstrating the relevant concepts;
  - to acquire teaching materials and educational modules meeting the aims of environmental education;
- promote working relations with research institutes in the field of natural science, social science and education;
- develop an active and stimulating policy for the initial and in-service training of teachers by:
  - introducing appropriate elements into their training programmes;
  - creating, within and around schools, educational areas conducive to the sensory awakening of pupils and to practical activities;
- create an infrastructure designed to help teachers and others involved in environmental education through the provision of consultants, a diversified range of curricula, training facilities and documentation;
- ensure wide distribution of this Recommendation among all interested parties, especially curriculum developers, educational advisers, teacher trainers and teachers, the Secretary General to transmit this Recommendation to the Governments of those States, Parties to the European Cultural Convention, which are not members of the Council of Europe.

Appendix to Recommendation No. R(91)8

Basic principles for the promotion of environmental education

I. Contents

Curricula should enable pupils:

- to gain a basic knowledge of ecology in its broadest sense and deal with themes relating to environment protection. Teaching in this area should take into account the intellectual and psychological development of pupils.
- to learn to reason in terms of systems;
- to understand the economic, political and ecological interdependences.

It is advisable to:

- enhance, in curricula at all levels of education, the various subjects touching on questions of environmental and ecological protection; while biology and geography are the key subjects for this purpose, all other disciplines can help to promote the teaching of ecology and environment protection (civics, plastic arts, relegion, etc);

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- encourage multidisciplinary schemes where every discipline helps to show how the various elements interact and contribute to a global perception of realities; mobilise the whole teaching profession around the subject of the environment.

II. Methods: Environmental issues cannot be taught solely in the form of knowledge. They should be related to the world in which pupils live and to real-life situations. Experience of nature is the best means of encouraging a favourable attitude towards the environment.

III. Instruments: The use of out-of-school teaching tools and facilities for environmental education enables teachers to diversify their teaching methods and stimulate school activities and basic learning processes. These instruments also make an important contribution to a realisation of the requirements of the environment and should therefore be fully integrated into the educational process.

IV. Teacher training: Initial and in-service training of teachers is the key to the integration of environmental aspects into curricula. The success of environmental education depends to a large extent on the knowledge, skills and attitudes of the teachers themselves.

Document CM/DEL/Dec (91) 460
of the Council of Europe

(The French version of the Council's recommendation was published in the organization's bilingual *Newsletter/Faits nouveaux*, No 5, 1991).

Networking in Environmental Education

An International Consultation Meeting on the Development of Networks in Environmental Education was held in Metro Manila, Philippines, 4-8 February 1991. The meeting was organized as an activity of the UNESCO-UNEP International EE Programme (IEEP) by the Colombo Plan Staff College for Technician Education, based in the Philippines. Participants and observers came from Australia, Bulgaria, India, Indonesia, Kenya, Malaysia, New Zealand, Thailand and the host country. There were also representatives of UN agencies and governmental and nongovernmental organizations.

Participants presented reports on the environment, education systems and status of EE networking in their respective countries. (See Final report, below). Two working groups were formed to focus on discussion of guidelines for establishing networks at international and subnational levels. Particular reference was made to the international EE network and networking conducted by the International EE Programme and the technical advice offered by the latter.

The guidelines agreed upon at the international consultation meeting for development of EE networks at international, regional and subregional levels involved largely linkage to corresponding IEEP networks and networking. As for guidelines for developing EE networks at the national and subnational levels, they included:

1. A leading government agency and/or centre of excellence for EE undertaking the initiative of convening an inter-agency working group to study and survey existing networks and their infrastructure relevant to EE networks (EEN) and prepare a proposal to establish national and effective EENs.

2. Organizing a national consultation meeting among all interested agencies and identifying the need of an EEN, its objectives, appropriate infrastructure and potential activities, preparing a draft strategic plan, and appointing working committee to pursue the recommendations of the meeting.

3. Identifying the target clientele and user groups of the agencies involved.

4. Developing programme/project proposals specific to the needs of identified groups.

5. Identifying the responsibilities and authority of participating agencies and the human and technological resources required.

6. Developing an action plan through consultations in order to obtain agreement of participating agencies, secure funding, and begin implementation of the plan.

EE networks – it was further agreed – should provide a forum at the regional/subregional/national/subnational levels to promote educational programmes and activities to help achieve sustainable management of the environment, i.e., environmentally sound, sustainable development.

A general objective for environmental education networks should be: To promote the flow, exchange and use of relevant EE information and resources so as to be more effective in planning, implementing and evaluating EE programmes in the member countries.

Objectives for international/regional and subregional networks should be:

1. To increase EE activity within the region through: a) provision of up-to-date information on environmental issues in the regions; b) provision of information relevant to curriculum development in EE; and c) responding to requests for EE information.

2. To improve the effectiveness of EE through: a) provision of information on teacher training; b) provision of a directory of expertise in: teacher

training; resource management; and curriculum development; c) provision of bibliographic information on curriculum materials in EE; and d) dissemination of information about assessment and monitoring of researches on EE.

3. To disseminate information on EE methodology and organization.

4. To act as a catalyst in EE through: a) fostering contact among members and other agencies; and b) initiating conferences, meetings, discussions, etc.

Objectives for national and subnational networks should be:

1. To provide an EE link between international and regional EENs and the country's organization.

2. To coordinate with other national networks of common interest.

3. To coordinate the activities and programmes of the network and its members.

4. To make available information and expert advice to members and interested persons.

5. To evaluate the effectiveness of the network.

6. To publicize the activities of the network and encourage participation.

7. To form linkages on EE with national networks and with other organizations within and/or outside the country.

For international/regional and subregional networks:

Evaluation should be seen as important in the functioning of an EE network. Evaluation criteria should be determined at the commencement of network operations. The network should evaluate its own accomplishments and contributions. Use can be made for this purpose by statistics relating to the provision of, and the requests for, information services. Such statistics might include, for example: number of requests for information, and number of publications. Contract evaluation by expert services might also be undertaken and evaluative feedback from network members might be considered.

For national and subnational networks: It was suggested at the consultation meeting that the effectiveness of the EEN be evaluated at all levels at regular intervals with respect to the objectives set. Evaluation instruments would include interviews, reports, questionnaires, observations gained through visits, and community responses. The time frame for the evaluation should be consistent with the objectives of the respective programme.

(A 74-page Final Report of the above international consultation meeting on developing EE networks is available, in English, to institutions by writing to: *Connect*, address on the last page. The Final Report contains, *inter alia*, a summary of the country report and of the working documents as well as guidelines, in detail, for developing and maintaining EENs plus their objectives, structures, functions, activities and methods of implementation.)

EE Activities in Africa

Regional Teacher-Training Workshop

From 4 to 8 November 1991 a regional workshop for the training of administrative and teaching personnel in environmental education was held in Abidjan, Côte d'Ivoire, the workshop was organized jointly by the African Development Bank and USAID. Participants represented a variety of African countries as well as governmental and nongovernmental international organizations. Similar to the workshop above, the meeting was organized around plenary sessions and two working groups or commissions, one English-speaking, the other French-speaking.

Four strategies were stressed: (1) consolidation of current EE efforts and programmes; (2) development of new actions and programmes; (3) reinforcement and revaluation of institutional, organizational and human potential in EE with the goal of excellence in mind; and (4) organizing the exchange of information and experience.

Regarding EE content, participants emphasized adaptation to local environmental situations and problems, but with many themes in common, i.e., environmental concepts, drought, desertification, deforestation, pollution, quality of lige, population and resources, environmental sicknesses, drinking water, soil erosion, brush fires, etc. EE content for the training of teachers in the formal sector should be built around a well-thought-out programme and institutional structure with special attention given to decision makers and administrators.

In the nonformal sector the training of group leaders, communication personnel, artists and others in both rural and urban areas was underlined. Youth centers were to be EE oriented and EE information guides elaborated.

Didactic material was also to be locally adapted and aimed at the improvement of attitudes and behaviour towards the environment. Television and interactive radio were mentioned as good EE tools. In both the formal and nonformal sectors, inventory and evaluation of existing EE materials were to be made and renovation sought. Coordination and cooperation between the two sectors at the national level were considered an absolute necessity, also harmonious school-community relationships vis-a-vis the local environment. Cooperation at the regional and international levels was likewise viewed as essential.

Effective actions as follow-up to the workshop were recommended which would include: dissemination of all documentation and resolutions of the workshop; development of EE programmes in the participants' countries according to the strategies defined by the workshop; integration of an EE component in all development projects; establishment of a network for the exchange of information and experiences, reports from participants on their own follow-up actions.

Subregional Teacher-Training Workshop on EE and Development in Central Africa

A subregional teacher-training workshop on environmental education and development in Central Africa was held in Kinshasa, Zaire, 24-28 June 1991. The workshop was organized by the Zaire Federation of Associated UNESCO Clubs in the framework of the UNESCO-UNEP International EE Programme. There were twenty-two participants and observers who came from Cameroon, Congo, Gabon and the host country.

The objectives of the wokshop were to: (1) familiarize participants with the environmental problems of the world and especially of Central Africa and with the goals, contents and methods of EE, particularly with reference to the African subregion; (2) to analyse the impact of economic development on the local environment and to propose educational solutions for remedying it; to furnish participants with guidelines for the incorporation of EE into the training programmes for educational planners as well as for teacher trainers; and (3) to promote the exchange of information and experience through the presentation of country reports on respective developments in EE training of educational planners, administrators and teacher trainers at the secondary level.

The workshop was organized into plenary sessions for talks and general discussions and two working groups to deal with particular themes of the meeting. The themes were: the environmental problems of Central Africa; the goals, objectives, content, methods and strategies of EE; the situation in participating countries; the local impacts of economic development; rational use of natural resources; the incorporation of EE into the training of key education personnel; and the preparation of EE materials for the latter.

The workshop concluded that Central Africa faced fundamentally similar environmental problems and the same need for increased but sustainable development, which called for a policy of rationally exploited natural resources, etc., and effective integration of EE into all levels and types of education and schooling — formal and nonformal; primary, secondary and tertiary; technical, vocational and industrial. With regards to EE for Central Africa, participants urged the creation of interministerial coordinating mechanisms at both the national and subregional levels.

(A Final Report of the workshop is available to institutions, in French, by writing to *Connect*, address on the last page.)

EE News and Publications

The 28th Congress of the International Society of City and Regional Planners will have as its subject, **"Towards Planning for Sustainable Develoment at a Supernational Level."** The congress will be held in Cordova, Spain, 1-6 October 1992. For more information, write: Secretariat, ISOCARP, Mauritskade 23, 2514 HD, The Hague, Netherlands. ◆ The Sixth Meeting of the Society of Human Ecology will treat the theme, **"Human Ecology: Crossing Boundaries."** The meeting will take place in Utah, 2-4 October 1992. For information about participation, etc., write: Scott Wright, University of Utah, FCS Dept., 228 AEB, Salt Lake City, Utah 84112, U.S.A.

A 316-page, folio-size **Sourcebook in Environmnetal Education for Secondary School Teachers** has been published in English and is available from: **UNESCO** Principal Regional Office for Asia and the Pacific, P.O. Box 967, Prakanong Post Office, Bangkok 10110, Thailand. The sourcebook is the product of a regional training course organized by the UNESCO Regional Office at the University of the Philippines in 1989. Part One contains twelve chapters covering the knowledge base of EE. Part Two contains twelve chapters on the pedagogical aspects. There are, as well, exemplar lesson plans, sample instruments for assessing students' achievements and evaluating training programes and worksheets for organizing field investigations.

The World Environment Day theme for 6 June 1992 has been announced by **UNEP** as **"Only One Earth — Care and Share."** ◆ The fifth issue of UNEP's *ET Worldwide*, the periodic compendium of environmental training opportunities world-wide is now available by writing to: EE & T Unit, UNEP, P.O. Box 30552, Nairobi, Kenya. UNEP's Bulletin, *Industry and Environment*, April-June 1991 and July-September 1991, features articles titled: "Computers: tools for environmental management in industry" - Parts I and II, and "Information technology as a management tool in environmental protection: the case of IBM." This publication is available from: UNEP Industry and Environment Office, Tour Mirabeau, 39/43 Quai André Citroën, 75739 Paris Cedex 15, France.

IAEA Bulletin, No. 4, 1991, the quarterly journal of the **International Atomic Energy Agency,** is devoted to water, particularly "Devoting isotope techniques for water exploration in the Sahel"; "Environmental isotope hydrology laboratories in developing countries"; and "Atoms and ecology: Saving the Aral Sea and its river regions." Write: Division of Public Information, IAEA, P.O. Box 100, A-1400 Vienna, Austria.

The World Health Organization **(WHO)** has issued the brochure, *The Implementation of the European Charter on Environment and Health*, in English, French, German and Russian, which is a report of the first European conference on the subject, attended by ministers of health and of the environment, and others, representing twenty-nine member countries. Write: WHO Regional Office for Europe, 8 Scherfigsvej, DK 2100-Copenhagen 0, Denmark. The UN organization has also issued a list of its publications and documents on community water supply and sanitation, for which one should write that division of WHO, Avenue Appia, 1211, Geneva 27, Switzerland.

World Development, January 1992, the periodical of the UN Development Programme (**UNDP**) features an article entitled "Conservation Through Human Development," or how Madagascar's forests are being saved by helping farmers to grow more food as an alternative to the slash-and-burn practises of the past. Write: *UNDP World Development*, One UN Plaza, New York, N.Y. 10017, U.S.A.

A small brochure, *Global Change and Global Responsibilities*, has been published by the **United Nations University** in English and French. It describes the second Medium-Term Perspective of the UN University for 1990-1995. The university is described by its charter as "an international community of scholars, engaged in research, postgraduate training and the dissemination of knowledge..." and is directed to "devote its work to research into the pressing global problems of human survival, development and welfare that are the concern of the UN and its agencies, with due attention to the social sciences and the humanities as well as the natural sciences, pure and applied." In this connection the UN University regularly publishes a journal, *Work in Progress*, in English, French, Spanish and Japanese, containing samplings of its research in various stages of progress, or outside material related to it. Issue No. 3, September 1991, for instance, is on "Cities in the 21st Century." For a catalogue of its publications, Write: *Work in Progress*, The United Nations University, Toho Seimei Building, 15-1, Shibuya 2-chome, Shibuya-ku, Tokyo 150, Japan.

A meeting of **OECD** ministers on "Environment and Development" has resulted in a policy affirming a new, cooperative approach to achieving sustainable development at the national, regional and global levels. The statement, in part, is an input of OECD to the UN Conference on Environment and Development, scheduled for early June, Rio de Janeiro, Brazil. The organization is continuing, as well, to publish materials on associated subjects, the latest being booklets entitled, *Environmental Policy: How to Apply Economic Instruments* and *Respond to Climate Change: Selected Economic Issues*. Additionally, *Cities and New Technologies* has just been published. Normally, as in the latter case, OECD publications are in English and French. For more information, write: Organization for Economic Cooperation and Development, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

Special notice: Enclosed with this issue of *Connect* is an Earth Pledge, prepared for the reader's signature by the Secretariat of the forthcoming United Nations Conference on Environment and Development, to be held in Rio de Janeiro, Brazil, 1-12 June 1992, and fully supported by the UNESCO-UNEP IEEP. Please sign and send as soon as possible to : Earth Pledge, UNCED, Room S-3060, United Nations, New York, N.Y. 10017, U.S.A.

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Connect

UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

Vol. XVII, No. 2, June 1992

UNCED
The Earth Summit

UNCED is — or has just been — the historic United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, 3-14 June 1992. Over one hundred heads of state and government attended, as did delegates from more than 170 countries, virtually all pledged to preserve the endangered planet and its protective envelope.

By consensus Agenda 21 — the 800-page action programme for now to the 21st century — was adopted and the following agreed upon:

Rio Declaration on Environment and Development

Principle 1: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2: States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment or other States or of areas beyond the limits of national jurisdiction.

Principle 3: The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Principle 4: In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5: All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development , in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.

Principle 6: The special situation and needs of developing countries, particularly the least developed and those most environmetally vulnerable shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7: States shall cooperate in spirit of global partnership to conserve, protect and restore the health and integrity of the earth's eco-system. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8: To achieve sustainable development and a higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9: States should cooperate to strengthen endogenous capacity, building for sustainable development by improving scientific understanding through exchanges and scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Principle 10: **Environmental issues are best handled with the participation of all concerned citizens, at the relevant level.** At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision making processes. **States shall facilitate and encourage public awareness and participation by making information widely available.** Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11: States shall enact effective environmental legislation. Environmental standards, management objectives and piorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

Principle 12: States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13: States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14: States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15: In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16: National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

Principle 17: Environmental impact assessment, as a national instrument, shall be undertaken for proposed actitivities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18: States shall immediately notify other states of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19: States shall provide prior and timely notification and relevant information to potentially

affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20: Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21: The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22: Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23: The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24: Warfare is inherently destructive of sustainable development. States shall therefore respect international law, providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25: Peace, development and environment protection are interdependent and indivisible.

Principle 26: States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the Charter of the United Nations.

Principle 27: States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

Agenda 21

"Agenda 21 is a programme of action for a sustainable future for the human family and a first step towards ensuring that the world will become a more just, secure and prosperous habitat for all of humanity."

Secretary-General, UNCED

For environmental educators, Section IV, Chapter 4 of UNCED's Agenda 21 — on "education, public awareness and training" — is of primordial interest. "The Declaration and recommendations of the Tbilisi Conference on environmental Education," the pertinent chapter states, "organized by UNESCO and UNEP and held in 1977, have provided the fundamental principles for the proposals" of UNCED.

(The Tbilisi Declaration and recommendations are contained in *Connect*, January 1978.)

The **programme areas** described are: (1) reorienting education towards sustainable development; (2) increasing public awareness; and (3) promoting training. The first programme area includes as its objectives: (a) to endorse recommendations of the World Conference on Education for All (Jomtien, Thailand, 1990), which included environmental literacy (see *Connect*, June 1989); (b) to achieve environmental and development awareness in all sectors of society on a world-wide scale as soon as possible; (c) to strive to achieve the accessibility of environmental and development education, linked to social education, from primary school age through adulthood to all groups of people; and (d) to promote integration of environment and development concepts, including demography, in all educational programmes, in particular the analysis of the causes of major environment and development issues in a local context, drawing on the best available scientific evidence and other appropriate sources of knowledge, and giving special emphasis to the further training of decision makers at all levels.

The activities proposed for the first programme area include, in turn:

(a) Governments should strive to update or prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels within the next three years. A thorough review of curricula should be undertaken to ensure a multidisciplinary approach, with environment and development issues and their socio-cultural and demographic aspects and linkages.

(b) Countries are encouraged to set up advisory national environmental education coordinating bodies or round tables of representatives of various environmental, developmental, educational, gender and other interests, including non-governmental organizations, to help mobilize and facilitate different population groups and communities to assess their own needs and to develop the necessary skills to create and implement their own environment and development initiatives.

(c) Educational authorities, with the appropriate assistance from community groups of non-governmental organizations, are recommended to assist or set up pre-service and in-service training programmes for all teachers, administrators, and educational planners, as well as non-formal educators in all sectors, addressing the nature and methods of environmental and development education.

(d) Relevant authorities should ensure that every school is assisted in designing environmental activity work plans, with the participation of students and staff.

(e) Educational authorities should promote proven educational methods and the development of innovative teaching methods for educational settings. They should also recognize appropriate traditional education systems in local communities.

(f) Within two years, the UN system should undertake a comprehensive review of its educational programmes, encompassing training and public awareness, to reassess priorities and reallocate resources. **The UNESCO/UNEP International Environmental Education Programme [IEEP] should, in cooperation with the appropriate bodies of the United Nations system, Governments, non-governmental organizations and others, establish a programme within two years to integrate the decisions of the Conference into the existing UN framework adapted to the needs of educators at different levels and circumstances.**

(g) There is a need to strengthen, within five years, information exchange by enhancing technologies and capacities necessary to promote environmental and development education and public awareness.

(h) Countries could support university and other tertiary activities and networks for environmental and development education. Cross-disciplinary courses could be made available to all students. Existing regional networks and activities and national university actions which promote research and common teaching approaches on sustainable development should be built upon, and new partnerships and bridges created with the business and other independent sectors, as well as with all countries for technology, know-how, and knowledge exchange.

(i) Countries, assisted by international organizations, non-governmental organizations and other sectors, could strengthen or establish national or regional centres of excellence in interdisciplinary research and education in environmental and developmental sciences, law and the management of specific environmental problems.

(j) Countries shoul facilitate and promote non-formal education activities at the local, regional and national levels by cooperating with and supporting the efforts of non-formal educators and other community-based organization. The appropriate bodies of the United Nations system in cooperation with non-governmental organizations should encourage the development of an international network for the achievement of global educational aims. At the national and local levels, public and scholastic forums should discuss environmental and development issues, and suggest sustainable alternatives to policy makers.

(k) Educational authorities, with appropriate assistance of non-governmental organizations, including women's and indigenous peoples' organizations, should promote all kinds of adult education programmes for continuing education in environment and development, basing activities around elementary/secondary schools and local problems. These authorities and industry should encourage business, industrial and agricultural schools to include such topics in their curricula.

(l) Governments and education authorities should foster opportunities for women in non-traditional fields and eliminate gender stereotyping in curricula.

(m) Governments should affirm the rights of indigenous peoples, by legislation if necessary, to use their experience and understanding of sustainable development to play a part in education and training.

(n) The United Nations could maintain a monitoring and evaluative role regarding decisions of the UN Conference on Environment and Development on education and awareness, through the relevant UN agencies.

As for the **means of implementation:**

More support for education, training and public awareness activities related to environment and development could be provided by: (a) giving higher priority to those sectors in budget allocations, protecting them from structural cutting requirements; (b) shifting allocations within existing education budgets in favour of primary education, with focus on environment and development; (c) promoting conditions where a larger share of the cost is borne by local communities, with rich communities assisting poorer ones; (d) obtaining additional funds from private donors concentrating on the poorest countries, and those with rates of literacy below 40 per cent; (e) encouraging debt for education swaps; (f) [illegible]ting restrictions on private schooling and increas.. g the flow of funds from and to non-governmental organizations, including small-scale grass-roots organizations; (g) promoting the effective use of existing facilities, for example multiple school shifts, fuller development of open universities and other long-distance teaching; (h) facilitating low-cost or no-cost use of mass media for education purposes; and (i) encouraging twinning of universities in developed and developing countries.

Concerning the **second programme area,** namely, **increasing public awareness,** the basis for action is: The need to increase public sensitivity to envi-

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ronment and development problems and involvement in their solutions and foster a sense of personal environmental responsibility and greater motivation and commitment towards sustainable development.

The **objective** is: To promote broad public awareness as an essential part of a **global education effort to strengthen attitudes, values and actions which are compatible with sustainable development.**

The **activities** proposed include, *inter alia:*

(a) The UN system should improve its outreach in the course of a review of its education and public awareness activities to promote greater involvement and coordination of all parts of the system.

(b) Countries should stimulate educational establishments in all sectors, especially the tertiary sector, to contribute more to awareness building. Educational materials of all kinds and for all audiences should be based on the best available scientific information, including the natural, behavioural and social sciences, and taking into account esthetic and ethical dimensions.

(c) UNESCO, UNEP and universities should enrich pre-service curricula for journalists on environment and development topics.

(d) Countries should promote environmentally sound leisure and tourism activities, making suitable use of museums, heritage sites, zoos, botanical gardens, national parks, and other protected areas.
(See *Connect,* December 1986, "Micro-Environments for Environmental Education")

(e) UNICEF, UNESCO, UNDP and non-governmental organizations should develop suport programmes to involve young people and children in environment and development issues.

Lastly, regarding the **third programme area,** i.e. **promoting training,** it should have a job-specific focus, aimed at filling gaps in knowledge and skill that would help individuals find employment and be involved in environmental and development work. At the same time, training programmes should promote a greater awareness of environment and development issues as a two-way learning process.

Accordingly, the following **objectives** are proposed:

(a) to establish or strengthen vocational training programmes that meet the needs of environment and development with ensured access to training opportunities, regardless of social status, age, gender, race or religion;

(b) to promote a flexible and adaptable workforce of various ages equipped to meet growing environment and development problems and changes arising from the transition to a sustainable society;

(c) to strengthen national capacities, particularly in scientific education and training, to enable Governments, employers and workers to meet their environmental and development objectives and to facilitate the transfer and assimilation of new environmentally sound, socially acceptable and appropriate technology and know-how;

(d) to ensure [that] environmental and human ecology considerations are integrated at all managerial levels and in all functional management areas, such as marketing, production and finance.

As for **activities:**

(a) Countries, with the support of the UN system, should identify workforce training needs and assess measures to be taken to meet those needs.

(b) National professionnal associations are encouraged to develop and review their codes of ethics and conduct to strengthen environmental connections and commitments. The training and personal development components of programmes sponsored by professional bodies should ensure incorporation of skills and information on the implantation of sustainable development at all points of policy and decision-making.

(c) **Countries and education institutions should integrate environmental and developmental issues into existing training curricula** and promote the exchange of their methodologies and evaluation. (See *Connect,* June 1986 and December 1991)

(d) Countries should encourage all sectors of society, such as industry, universities, government officials and employees, non-governmental organizations and community organizations, to include an environmental management component in all relevant training activities, with emphasis on meeting immediate skill requirements through short term formal and in-plant vocational and management training. Environmental management training capacities should be strengthened, and specialized "training of trainers" programmes should be established to support training at the national and enterprise levels. New training approaches for existing environmentally sound practices should be developed that create employment opportunities and make maximum use of local resource-based methods.

(e) Governments are encouraged to consult with people in isolated situations, whether geographically, culturally or socially, to ascertain their needs for training to enable them to contribute more fully to developing sustainable work practices and lifestyles.

(f) Governments, industry, trade unions, and consumers should promote an understanding of the interrelationship between good environment and good business practices.

(g) Countries should develop a service of locally trained and recruited environmental technicians able to provide local people and communities, particularly in deprived urban and rural areas, with the services they require, starting from primary environmental care.

(h) **Countries should enhance the ability to access, analyse and effectively use information and knowledge available on environment and development.** Existing or established special training programmes should be strengthened to support information needs of special groups. The impact of these programmes on productivity, health, safety and employment should be evaluated. National and regional environmental labour-market information system should be developed that would supply, on a continuing basis, data on environmental job and training opportunities. Environment and development training resource-guides should be prepared and updated, with information on training programmes, curricula, methodologies and evaluation result at the local, national, regional and international levels.

(i) Aid agencies should strengthen the training component in all development projects, emphasizing a multidisciplinary approach, promoting awareness and providing the necessary skills for transition to a sustainable society. The environmental management guidelines of UNDP for operational activities of the UN system may contribute to this end.

(j) Existing networks of employers' and workers' organizations, industry associations and non-governmental organizations should facilitate the exchange of experience concerning training and awareness programmes.

(k) Governments, in cooperation with relevant international organizations, should develop and implement strategies to deal with national, regional and local environmental threats and emergencies, emphasizing urgent practical training and awareness programmes for increasing public preparedness.

(l) The UN system, as appropriate, should extend its training programmes, particularly its environmental training and support activities for employers' and workers' organizations.

Actually environmental education, training and information do not end with the special section devoted to them in Agenda 21. They recur consistently as components of almost all thirty-nine chapters of UNCED's programme of action from now until the 21st century, falling under "capacity building" primarily, but also under "human resources development" and similar subsections.

Indeed, **"capacity-building,"** or the strengthening and building of a nation's capacity for environmentally sound, sustainable development, is viewed as a key factor, that is, the capacity of both a country's people and its institutions. "A fundamental goal of capacity-building," it is further stated, "is to enhance /their/ ability to evaluate and address the crucial questions related to policy choices and modes of implementation among development options" with an informed understanding of both the potentials and limits of the environment, a need shared by all nations.

Building this capacity, Agenda 21 stresses, means not only a country's own efforts, but also a partnership with the international community in the improvement of the level of environmental and development skills, knowledge and technical know-how on the part of individuals, groups and institutions. People participation and responsibility are an essential part of environmental protection and sustainable development. Education, training and public awareness are essential factors. So is strengthening the roles of women, youth, indigenous peoples, farmers, local officials, trade unions, business and industry, and the scientific community.

Governments are to encourage the **emergence of an informed consumer public** by providing information on the consequences of consumption choices and behaviour in terms of environmental impact and one's own health. In this connection, more emphasis, should be placed on including the subject of environmental health in the curricula of secondary schools and universities and on generally educating the public.

Governments should ensure adequately educated people to undertake and participate in the harmonization of environmental concerns and development at all stages of the **decision-making and implementation process.** To do this, they should improve education by including interdisciplinary approaches in technical, vocational and university curricula. They should also undertake systematic training of government personnel, planners and managers on a regular basis, giving priority to integrative approaches and planning and management techniques.

Governments should similarly promote the development of the human resources required to **plan and manage land and land resources** sustainably through school curricula, community training, relevant extension services, etc. In combating deforestation, government activities should include training and development of appropriate skills, working facilities and conditions, public motivation and awareness.

In promoting **sustainable agriculture and rural development,** national governments are expected to (1) train professionals and planning groups down to the village level through formal and nonformal instructional courses, travel and interaction; and (2) generate discussion at all levels on policy, environmental and development issues related to agricultural land use and management through media programmes, conferences and seminars.

With regard to the **conservation of biological diversity,** the vital source of food, fibre and many medecines, UNCED laid out four programme areas for action: (1) providing information on biodiversity;(2) maximizing and spreading its benefits; (3) improving the conservation of biodiversity and wildlife; and (4) enhancing the capacity to manage biological resources including wildlife. These would require a major shift in thinking at all levels of decision-making combined with "strengthening and expanding environmental education and specialist training facilites to develop human resource capacities."

Protection of the quality and supply of freshwater resources, in turn, involves awareness building and education at all levels of society with an emphasis on hygiene, local management and risk reduction. It also entails a high degree of community participation in the conception, planning, decision-making, implementation and evaluation of projects for domestic water supply and sanitation.

As for **environmentally sound management of toxic chemicals,** international organizations, with the participation of governments and nongovernmental organizations, should launch training and education projects in order to enable countries, particularly developing countries, to make maximum national use of international assessments of chemical risks. Likewise for the environmentally sound management of hazardous wastes.

Similar **management of solid wastes** includes public education, notably that of consumers, to exercise good housekeeping practices, such as the use of reusable — refillable and recyclable — types of packaging, together with a range of regulatory and other incentives to encourage industry to produce such packaging and generally reduce industrial wastes through cleaner production technologies.

Science for sustainable development was understandably stressed, specifically (1) promotion of the education and training of scientists, not only in their disciplines, but also in their ability to identify, manage and incorporate environmental values in research and development projects; (2) ensuring that a sound base in natural systems, ecology and resource management is provided; (3) and development of specialists capable of working in interdisciplinary programmes related to environment and development, including the field of applied social sciences.

In this connection, **improved communication and cooperation between the scientific and technological community and decision makers** were indicated as indispensable in the design and implementation of strategies for environmentally sound, sustainable development on the basis of the best available knowledge.

Perhaps the finest statement of UNCED's Agenda 21 by way of a conclusion is the following:

"Scientists have a special set of responsibilities which belong to them both as inheritors of a tradition and as professionals and members of disciplines devoted to the search for truth.

"A strengthening of the ethical principles, codes of practice and guidelines for the scientific and technological community would both increase environmental awareness and contribute to sustainable development. It would build up the level of esteem and regard for the scientific and technological community and facilitate the 'accountability' of science and technology. Increased ethical awareness in environmental and developmental decision-making would help to place appropriate priorities for the maintenance and enhancement of life support systems for their own sake, and in so doing ensure that the functioning of viable natural processes is properly valued by present and future societies."

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A selection of articles, 1976-1991, from *Connect* has just been published in a folio-size, colour-illustrated booklet, entitled *Changing minds — Earthwise.* Copies are available in English or French to institutions by writing to UNESCO regional offices or to *Connect,* address on last page.

First UNCED Follow-Up:

A World Congress for Education & Communication on Environment & Development

UNESCO and the International Chamber of Commerce in cooperation with UNEP are initiating the first global follow-up to the recent UN Conference on Environment and Development (Brazil, June 1992) with a World Congress for Education & Communication on Environment & Development **(ECO-ED)**, to be held in Toronto, Canada, 17-21 October 1992.

The purpose of ECO-ED is to stimulate informed action by improving the accuracy, quality and delivery of education and communication relating to the environment and sustainable development. A practical, action-oriented initiative, the World Congress fosters a cooperative exchange of relevant knowledge among educators, scientists, representatives of labour, business, governments, voluntary organizations and the media as well as educators, students, aboriginal peoples, and others.

ECO-ED includes a conference, an exposition, an arts festival, partner events (15-16 October), ECO-LINK: an outreach programme, and a trust fund. The *"partner events"* are being organized by independent organizations representing, thus far, women, youth, aboriginal peoples, energy educators and occupational health, safety and environment professionals. Each event allows a special interest group to develop themes and action plans of common interest.

Concurrent sessions of the *conference* will be led by experts in a number of areas that come under the environment/development umbrella. Speakers have been charged with making their topic — whether environmental isues, such as climate change or biodiversity, or development issues such as human settlements or technology transfer — relevant to education and communication professionals. The programmes will be multi-tiered, including overview sessions for those new to the field, advanced updates for those seeking more detailed information, and hands-on workshops.

The *exposition* will offer participants the opportunity to share and acquire resource materials, including the latest publications, films, videos, interactive discs, software, books and other traditional and non-traditional materials. Corporations, governments and non-governmental organizations will present policies and programmes to protect the environment while advancing development.

ECO-LINK is conceived as a communication and knowledge outreach programme with two components: (1) a network of people (regional ECO-ED networks are already being established on every continent; they include representatives from all sectors whose task is to focus on education and communication on sustainable development in their region); and (2) a technological network (ECO-ED promoting linkages between existing communications networks and databases while improving access on a broad scale).

Lastly, *ECO-ED TRUST* is designed to fund on-going ECO-ED initiatives with activities and priorities identified at the Toronto Congress and by regional networks also to be supported.

(For further information on registration and exhibits, contact: Congress Canada, 191 Niagara Street, Toronto, Canada M5V 1C9; Tel: 1-416-860-1772; Fax: 1-416-860-0380. For other information, contact: ECO-ED Secretariat, 110 Eglinton Ave. W., 3rd Floor, Toronto, Canada M4R 1A3; Tel: 1-416-482-9212; Fax: 1-416-482-9601.)

ECO-ED is also staging under UNESCO sponsorship a fair for sharing curricula and resource materials about environment and development topics. The purpose is to gather the materials currently available from around the world and present it in table-top format, to be perused by Conference delegates. There will be a nominal charge of $100.00 per six-foot table for commercial sellers for the four-day period, 17-20 October 1992. This charge will not apply to anyone distributing free materials.

All types of materials are welcome — from posters, books, and publications to the latest interactive video disc technology. A catalog of all submitted documents will be prepared. If you are interested in participating in this fair, please contact Congress Canada at the adress above.

Even if you are not attending ECO-ED, you may send materials for display to the ECO-ED Secretariat at the address also indicated above.

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This issue is printed on recycled paper not treated with chlorine.

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UNESCO-UNEP ENVIRONMENTAL EDUCATION NEWSLETTER

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EE responds

Environment or Development — a False Alternative?

The debate should be closed. False alternatives have been the plague of human history — until very recently that of *either* economic growth at (almost) any cost to the natural environment *or* zero growth to save the Earth.

To begin with, zero growth for whom? For the empoverished of the earth? Poverty is the great polluter — of land, water and *people*. Witness the tragedy of Somalia today.

When offered a choice of two desirable things, said Oscar Wilde with his usual wit, «I choose both.» The most recent response to the false alternative we have just posed has been the Rio Conference on Environment and Development, namely, urgent advocacy of *environmentally sound, sustainable development*.

It should come as no surprise that we place at the heart of the problem environmental education (EE) for sustainable development, along with population education (see page 6), indeed, peace education, as difficult admittedly as it is essential, etc. (Might not one call *eco-development* a progenitor?)

Admittedly, too, no one can say with precision exactly what constitutes sustainable development for every country in the world from, say, Somalia to Japan. However, there are definitions which indicate some consensus (fortunately). To take an extreme:

A sustainable world, World Bank economist Herman Daly has said, would not use renewable resources (forests, soils, waters, fish and game) faster than they are renewable. It would not use nonrenewable resources (fossil fuels, mineral ores) faster than renewable substitutes can be found for them. It would not release pollutants faster than Earth can process them to make them harmless.

To this Professor Donella Meadows (author of our EE publication, *Harvesting One Hundredfold)* sensibly remarks: "By that definition, there is not an economy in the world that is sustainable. The human world is a long way from meeting the needs of the present, and it is borrowing massively from the future — not only by piling up money debt but also by degrading the resources from which all real wealth ultimately comes."

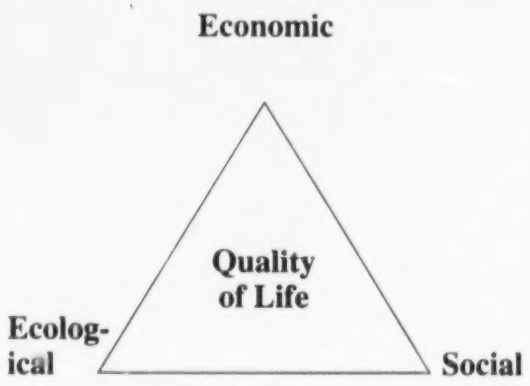
Simply expressed and generally accepted is the definition of the (Brundtland) report issued by the UN World Commission on Environment and Development: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The distinction between *growth* and *development* is useful and can be demonstrated by a homely example: a child normally grows in size until adulthood, but his/her development (one hopes) is lifelong. Similarly, in social terms, one should speak of the goal of a society's development as that of procuring for its members a better quality of life — and define *quality of life* in terms of health and longevity, employment, education, freedom and security, culture and the respect for basic human rights. One might add an esthetic dimension.

The dilemma for decision-makers is how to improve a people's quality of life through economic growth (certainly a necessity for most, if not all, countries of the world) without sacrificing their natural – or built – environment. Again, however complex, the solution is in *sustainable development.*

It is a unifying concept that takes into consideration social, economic and environmental goals. A graphic model suggested by two Canadian environmentalists (Jacobs and Sadler) looks like this:

This model presents the concept of sustainable development as a scheme for analyzing the policies and investments involved in a country's, or community's, development planning. It further involves a system of values and choice of policies that may vary from one society to another, each to wisely define its own, advisedly in terms of an improved quality of life for its members. And this has suggested another graphic representation:



The triangle indicates the parameters which largely determine the quality of life of a population in the perspective of sustainable development.

Ecological pole: As biological development, the development of human societies undergoes ecological constraints and demands. Here environmental education has particular relevance (while taking the other parameters equally into account). The Humanity/Nature dimension is indispensable in planning sustainable development.

Economic pole: The economic vitality of a society depends on its capacity to dispose of a surplus which it can exchange for the goods it lacks. The surplus can come from its productivity, technology and know-how, etc. Insofar as it derives from its natural resources, their renewability or nonrenewability is a prime consideration if the society's goal is sustained development. The possibility of substitutes has been mentioned as an important factor. In like manner prices for natural-resources derivatives would best, as well, allow for their recycling to the maximum possible, so as to extend the lifetime of their usability, ideally for generations to come.

Social pole: A country's accumulation of wealth finds its meaning and justification in its social development, that is, in the improvement of the quality of its people's lives – though not at the expense of another country, or the worl at large.

In each of the three areas a central consideration is the quality of life and its betterment, now and in the future – the central goal of sustainable development.

Strategic imperatives

Principle objectives for environment and development policies (according to the Brundtland commission), which follow from the concept of sustainable development, include:

- reviving growth
- changing the quality of growth
- meeting essential needs for jobs, food, energy, water and sanitation
- ensuring a sustainable level of population
- conserving and enhancing the resource base
- reorienting technology and managing risk
- merging environment and economics in decision making

The pursuit of sustainable develoment, in turn, requires:

- a political system that secures effective citizen participation in decision making
- an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis
- a social system that provides for solutions for the tensions arising from disharmonious development
- a production system that respects the obligation to preserve the ecological base for development
- a technological system that can search continuously for new solutions
- an international system that fosters sustainable patterns of trade and finance, and
- an administrative system that is flexible and has the capacity for self-correction.

These strategic imperatives have been approved by the UN General Assembly. They are still, generally, to be implemented – with EE as a major factor in sustainable development.

(The above article is almost wholly based on a text prepared by biologist Claude Villeneuve for the UNESCO-UNEP International EE Programme. The text contains the citations from the Brundtland commission. When available in final published form, it will be so noted in an issue of *Connect*.)

The Progress of Sustainable Development in Industry Internationally

Forty ministers and heads of industry of twenty-four developing and developed countries met on 24 March 1992 in New York City, under the auspices of the United Nations Environment Programme (UNEP) and the International Chamber of Commerce (ICC) to discuss the theme, "Industry and Environment."

Participants resolved to establish a permanent international panel to periodically evaluate the progress, in industry, of *The Business Charter for Sustainable Development*, launched the previous year by the ICC and supported since by more than 1,000 of the world's most important companies and business organizations. (See below for the *Charter* itself.)

Subsidiary themes discussed at the March 1992 meeting, whose objective was reinforcement of cooperation and exchange between government and industry, dealt with: trade and environment, the exportation of dangerous technology to developing countries, education and training, the reorientation of production and consumption towards sustainable development and the transfer of technology. The meeting was organized in conjonction with preparatory meetings for the *Rio Conference on Environment and Development* (see *Connect*, June 1992) and with the participation of the latter's Secretary General.

The Business Charter for Sustainable Development

In view of the world-wide membership of the International Chamber of Commerce and the vital importance for environmentalists of its declaration, *Connect* is reprinting ICC's *Business Charter* in full. Subtitled "Principles for Environmental Management," it has been translated thus far into twenty-three languages.

Introduction

Sustainable development involves meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Economic growth provides the conditions in which protection of the environment can best be achieved; and environmental protection, in balance with other human goals, is necessary to achieve growth that is sustainable.

In turn, versatile, dynamic, responsive and profitable businesses are required as the driving force for sustainable economic development and for providing managerial, technical and financial resources to contribute to the resolution of environmental challenges. Market economies, characterized by entrepreneurial initiatives, are essentiel to achieving this.

Business thus shares the view that there should be a common goal, not a conflict, between economic development and environmental protection , both now and for future generations.

Making market forces work in this way to protect and improve the quality of the environment — with the help of performance-based standards and judicious use of economic instruments in a harmonious regulatory framework — is one of the greatest challenges that the world faces in the next decade.

The 1987 report of the World Commission on Environment and Development, (Brundtland Report; see *Connect*, June 1988), "Our Common Future," expresses the same challenge and calls on the cooperation of business in tackling it. To this end, business leaders have launched actions in their individual enterprises as well as through sectoral and cross-sectoral associations.

In order that more businesses join this effort and that their environmental performance continues to improve, the International Chamber of Commerce hereby calls upon enterprises and their associations to use the following Principles as a basis for pursuing such improvement and to express publicly their support for them.

The term environment as used in this document also refers to environmentally related aspects of health, safety and product stewardship.

Individual programmes developed to implement these Principles will reflect the wide diversity among enterprizes in size and function.

The objective is that the widest range of enterprizes commit themselves to improving their environmental performance in accordance with these Principles, to having in place management practices to effect such improvement, to measuring their progress, and to reporting this progress as appropriate internally and externally.

Principles

1. Corporate priority: To recognise environmental management as among the highest corporate priorities and as a key determinant to sustainable development; to establish policies, programmes and practices for conducting operations in an environmentally sound manner.

2. Integrated management: To integrate these policies, programmes and practices fully into each business as an essential element of management in all its functions.

3. Process of improvement: To continue to improve corporate policies, programmes and environmental performance, taking into account technical developments, scientific understanding, consumer needs and community expectations, with legal regulations as a starting point; and to apply the same environmental criteria internationally.

4. Employee education: To educate, train and motivate employees to conduct their activities in an environmentally responsible manner.

5. Prior assessment: To assess environmental impacts before starting a new activity or project and before decommissioning a facility or leaving a site.

6. Products and services: To develop and provide products or services that have no undue environmental impact and are safe in their intended use, that are efficient in their consumption of energy and natural resources, and that can be recycled, reused, or disposed of safely.

7. Customer advice: To advise, and where relevant educate, customers, distributors and the public in the safe use, transportation, storage and disposal of products provided; and to apply similar considerations to the provision of services.

8. Facilities and operations: To develop, design and operate facilities and conduct activities taking into consideration the efficient use of energy and materials, the sustainable use of renewable resources, the minimisation of adverse environmental impact and waste generation, and the safe and responsible disposal of residual wastes.

9. Research: To conduct or support research on the environmental impacts of raw materials, products, processes, emissions and wastes associated with the enterprise and on the means of minimizing such adverse impacts.

10. Precautionary approach: To modify the manufacture, marketing or use of products or services or the

conduct of activities, consistent with scientific and technical understanding, to prevent serious or irreversible environmental degradation.

11. Contractors and suppliers: To promote the adoption of these principles by contractors acting on behalf of the enterprise, encouraging and, where appropriate, requiring improvements in their practices to make them consistent with those of the enterprise; and to encourage the wider adoption of these principles by suppliers.

12. Emergency preparedness: To develop and maintain, where significant hazards exist, emergency preparedness plans in conjunction with the emergency services, relevant authorities and the local community, recognizing potential transboundary impacts.

13. Transfert of technolgy: to contribute to the transfer of environmentally sound technology and management methods throughout the industrial and public sectors.

14. Contributing to the common effort: To contribute to the development of public policy and to business, governmental and intergovernmental programmes and educational initiatives that will enchance environmental awareness and protection.

15. Openness to concerns: To foster openness and dialogue with employees and the public, anticipating and responding to their concerns about the potential hazards and impacts of operations, products, wastes or services, including those of transboundary or global significance.

16. Compliance and reporting: To measure environmental performance; to conduct regular environmental audits and assessments of compliance with company requirements, legal requirements and these principles; and periodically to provide appropriate information to the Board of Directors, shareholders, employees, the autorities and the public.

(For further information, write: ICC, 38, Cours Albert-1er, 75008 Paris, France.)

Sustainable Development in the Humid Tropics

A Conference on Environmentally Sound Socio-Economic Development in the Humid Tropics was held in Manaus, Brazil, 13-19 June 1992. The conference was organized by the Association of Amazonian Universities, MAB-UNESCO, The United Nations University and the Third World Academy of Sciences. There were about 230 participants from twenty-eight countries.

The conference was a follow-up to the Rio UN Conference on Environment and Development (see *Connect*, June 1992) and aimed at implementing the recommendations of UNCED's Agenda 21. The conference was action-oriented and had four related objectives:

- to review the state of knowledge in selected areas of research, with a view to identifying some research priorities, with special reference to the areas where cooperation among scholars and pratitioners working in similar ecosystems situated in different cultural areas might be of special interest;
- to identify the means to strengthen institutionally local capabilities for research and training, and to recommend possible actions in this field;
- to discuss a cooperative South-South programme to improve the exchange of information and experiences, as well as scholars, to undertake parallel and joint research projects, and to disseminate knowledge in the form of comparative publication;
- to identify the possible contributions of sponsoring institutions and other international organizations to foster such South-South programmes.

There was a consensus regarding the need to foster such South-South cooperation and agreement that UNCED had opened perspectives providing opportunities to move concretely in this direction. One conclusion was that confronting the variety of ecological and social configurations in the various parts of humid tropical areas of the world could improve knowledge of the working of these complex and fragile socio-ecosystems and lead to the formulation of transition strategies towards sustainable development. Another conclusion was that much can be gained by studying comparatively across the South the successful cases of management of resources and development processes responding to the three criteria of *social equity*, *ecological sustainability* and *economic efficiency*. A comparative study of failures was felt to be equally pertinent.

It was further agreed that research should be future-oriented in order to strengthen the response-capacity of the developing countries to the emerging and changing challenges facing humanity. For this purpose it was considered essential that the research and development systems of the developing countries become increasingly self-reliant and resilient to external pressures; that the local capacity for carrying out research and training in the humid tropics should reach at the earliest possible time the necessary critical mass estimated by the Third World Academy of Sciences as being at least 1,000 scientists per 1 million population by the turn of the century.

Other conclusions: Efficient dissemination and utilization of science and technology requires a better communication between all the actors in the development

57 BEST COPY AVAILABLE

processes. Scientists (and educators) must learn to interact with policy makers, the business community and citizens at large. They must equally learn to work within a holistic and interdisciplinary framework . Research on sustainable development requires the concerted effort of both natural and social science personnel.

Six areas for concentrated effort were identified: (1) management of renewable resources for sustainable socio-economic development with special attention given to (a) rehabilitation of degraded areas; (b) agroforestry; (c) forest management; (d) establishment of extractive and biosphere reserves; and (e) rational use of biodiversity for the benefit of local and indigenous populations and the countries concerned. (2) the city as a basis for sustainable development in the humid tropics; (3) health and environment; (4) biosphere reserves; (5) mineral resources; and (6) climate and hydrology.

Strengthening the local capability of educating and training high-level specialists capable of planning and implementing sustainable development strategies and managing rationally natural resources was considered by participants as important as strengthening the local research capacity.

(For the Final Report on the Brazil conference, write to: MAB Secretariat, UNESCO, 1, rue Miollis, 75015 Paris, France.)

Environmental Education for Women

An Environmental Education Seminar for Women was held in Auckland, New Zealand, 7-8 April 1992. The seminar was organized by the Pan Pacific and South East Asia Women's Association International with the support of the UNESCO-UNEP International Environmental Education Programme and the cosponsorship of the International Council of Women. The objectives of the seminar were: to share experiences and ideas ; to gain in knowledge and skills ; to increase understanding of conceptual issues related to population, environment, development and women ; and to acquire information about the development of environmental education.

The theme-mood of the seminar is summarized in the Final Report: "For too long, women have watched male leaders in their countries follow advice and make decisions which have led to environmental, and cultural, damage at local and global levels. Particularly in developing countries, women express their despair that male leaders still emulate the economic and technological strategies of the developed countries which are already in dispute for their harmful effects upon the world and its people."

The special character and *raison d'être* of such a seminar for women were stressed in a keynote address by participant Jocelyn Fish. Speaking of sustainable development, Ms. Fish said: "Above all, sustainable development is a women's issue – and as women we must use our energy and our skills and our voices to make things change. Women must be agents of change. We are the caretakers of the future world environment not only because women do so much of the farming, the wood collecting, the water hauling in the developing world – but also because we are the bearers of the children, the tangible products of our labour – and providing for them is part of us. If we are to be purposeful and effective citizens of the world, we must take a full part in making the decisions that affect us all."

The seminar focused on several of the issues which most affect and determine the quality of life in ways which, in the words of the Final Report, "must be turned around."

On poverty: What has been primarily a rural problem of poverty in the Third World is becoming an urban problem (slums, unsafe water, sewage, etc.) Again, this poverty has a strong gender bias, as many poor households are headed by women. Moreover, "decreasing poverty of land affects women most in countries where women eat last from whatever is left when everybody else has eaten."

On pollution: Studies of women as distant as those from industrial centres as Eskimo women in Alaska have revealed pesticide content in breast milk.

On population planning and sustainable development: "This is the difficult issue which governments are least willing to address; and the alarming irony is that women have too little power over the decisions made on an issue that involves them above all others."

On environmental education: "Environmental education for women is one of the greatest needs the world faces, as well as one of the most powerful potential agents of change." One speaker quoted the well-known African proverb: "Educate a man and you educate an individual; educate a woman and you educate a community."

However (the Final Report continues), **" 'environmental education' is no longer the appropriate term to describe the educational force which we need to bring into play if we are to be effective in changing directions and improving the environment and the lives of people. Today, we need to orientate our thinking towards 'Education for Sustainability' which combines Environmental Education with Development Education, Peace Education, and Women's Issues."**

(Copies of this remarkable seminar's Final Report are available to institutions by writing to: *Connect*, address on last page.)

Reconciling Economic Growth and Environmentàl Protection

Changing Course is an important work originally written as a report to the Rio Conference on Environment and Development by a young multinational industrialist, Stephan Schmidheiny, and an international 4-member Business Council for Sustainable Development which he organized. The aim of the 374-page document, now published as a book, is to reconcile economic growth and protection of the environment so as to achieve sustainable development.

The recommendations proposed are linked to the conviction that only a free market integrating the "polluter pays principle" into economic and environmental policy can lead to sustainable development. In lively, readable detail the authors outline the other principles that businesses need to adopt to achieve sustainable development. They cover energy use, capital markets, the price of environmental impacts, trade, corporate management, technology cooperation, renewable resources (including agriculture and forestry) and close with an analysis of sustainable development in developing countries.

The book is studded with the case histories of 38 enterprises successfully combining environmental considerations and production practices with their own industrial growth and development. Indeed it demonstrates the new growth industry of environmentally aware companies mushrooming around the world.

Changing Course was first published (for sale) in English by the Massachusetts Institute of Technology, Cambridge, Mass., U.S.A., and has since appeared in other languages, among them French (*Changer de cap*, Dunod, 1992).

EE News and Publications

Meetings: As part of the follow-up to the Rio Conference, the Association internationale de développement et d'action communautaires (AIDAC) announces a workshop on "Gestion de l'environnement et des ressources humaines par le développement communautaire," to be held in collaboration with the Community Development Department of the Thai Ministry of Interior, in Banglamung, Thailand, 19-22 April 1993. For more information, write: AIDAC, 179, rue du Débarcadère, 6001 Marcinelle, Belgium. ◆ A workshop and an international conference will be held at the Virginia Polytechnic Institute and State University, Blacksburg, Virginia, U.S.A., March 9-11, 1993 and May 23-27, 1993, respectively. The workshop will be on "Implementing Integrated Environmental Management"; the conference on "Aquatic Ecosystem Health & Environmental Bioassay Techniques." Particularly active in such encounters is the University Center for Environmental and Hazardous Materials Studies of the Virginia Institute and University. It is multi- and interdisciplinary (14 affiliated faculty directors and five associate directors). It conducts workshops, symposia, seminars and training sessions and publishes documentation. For more details on activities and publications, write: John Cairns, Jr., Virginia Tech Institute and State University, Blacksburg, VA 24061-0415, U.S.A.

The National Workshop on Strategies for Developmental Education in Ecuador, organized by the Ministry of Education and Culture, was held in Patate, Ecuador, 27-29 November 1991. Twenty-seven educational and environmental experts participated. The principal output of the workshop was the Final Report, which contains a national strategy and action plan for EE in Educador. For a copy in Spanish, write: Ing. Victor H. Valencia, Programa de Educación Ambiental, Ministerio de Educación y Cultura, Bolivar 268 y Venezuela, Quito, Ecuador.

Another meeting of EE interest was held in Quito, Ecuador, (Quito, 23-25 April 1992), **The First Encounter: "Advertising and Environment."** This meeting was organized by the Environmental and Social Development Project pertaining to the executive Secretariat of the Convenio Andrés Bello, which is supported by the Konrad Adenauer Fundation and sponsored by the International Centre for Higher Studies on Communication for Latin America. The meeting was also under the patronage of the Ecuadorian Association of Advertising Agencies. There were forty-eight participants – advertisers, communicators, environmentalists and educators. They underlined the important interrelationship of advertising and the environment ; sought mechanisms for identifying and ending advertisements whose end result is damaging to the environment ; and planned a coherent and consistent environment-advertising campaign in the Latin American countries adhering to the Convenio Andrés Bello ; and, lastly, began efforts to obtain the support of television, radio and press multinationals for the transmission of environmental messages to the public. For more information, write: OREALC, Casilla 3187, Santiago de Chile, Chile.

A Workshop on Environmental Education: an Approach to Sustainable Development, conducted by **OECD,** took place in the organization's Development Centre, Paris, France, 6-7 April 1992. There were some thirty participants, one third of whom came from developing countries. The workshop reviewed case experiences from Africa, Asia and Latin America. Discussions focused mainly on EE approaches best suited for coping with local and national environmental problems as well as common principles to be followed in the varying contexts of developing countries, namely, the problem-solving approach ; updating information and knowledge, in part through action-research involving teachers ; and adaptation of methods and contents according to local conditions and situations. For more information, write: Development Centre, Organization for Economic Cooperation and Development, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

Sustainable development : There are a number of publications, and a periodical, on this increasingly important theme, published by **UNESCO**, and available for sale through : The UNESCO Press, Sales Division, 7, place de Fontenoy, 75700 Paris, France. *Environmentally sustainable economic development : building on Brundtland*, 100 pp., in English, to be published in French and Spanish, offers new, provocative ideas on life-styles, technology, population and poverty in relation to development. *Sustainable investment and resource use : Equity, environmental integrity and economic efficiency*, 176 pp., No. 9 in the Man and the Biosphere series, is co-published with Parthenon Publishing, who has exclusive sales rights in the U.K. Concerned about the lag between policy decisions, land use change and environmental improvement, this book identifies policy changes - fiscal, monetary, regulatory, planning, educational - that will stimulate investment for a sustainable future. Issue No. 1, 1992, of UNESCO's quarterly, *Nature & Resources* (published in six languages) is devoted to "Sustainable development for all" and deals with transition strategies, biodiversity, communication and water scarcity. The issue is richly illustrated in colour.

The report of a Regional Sensitizing Meeting of Social Scientists on *Environment and Development*, held in Bangkok, Thailand, 3-6 September 1991, and organized by UNESCO, is available to institutions by writing to : *Connect*, address below ; or to : Regional Unit for Social and Human Sciences in Asia and the Pacific, UNESCO PROAP, P.O. Box 967, Prakanong Post Office, Bangkok 10110, Thailand.

Other UNESCO publications : *The Status of "State of Art " in Environmental Education in Asia and the Pacific Region*, 123 pp. ; and Bibliography on Environment and Environmental Education, 1992, 42 pp. Both are available free of charge from : UNESCO Principal Regional Office for Asia and the Pacific, box 967, Prakanong Post Office, bangkok 10110, Thailand. *Environmental Education for Our Common Future, A Handbook for Teachers in Europe*, 98 pp., illus., published by the Norwegian University Press in cooperation with the UNESCO-UNEP International EE Programme (IEEP) and UNESCO Associated Schools Project. Available free to institutions by writing to : *Connect*, address below. Lastly, the 1992 *Catalogue of Documents and Publications* of UNESCO'S Education Sector, some of which are for sale and others free of charge (such as the IEEP's EE Series, available by writing tc *Connect*). The catalogue is available from : Documentation and Computer-Assisted Management Service, Education Sector, UNESCO, address below.

UNEP publications : A popular, colour-illustrated version of the report of UNEP (United Nations Environment Programme) to the recent Rio Conference has been published as *Earth Audit : the World Environment, 1972 to 1992 – Where Now ?* The organization's EE materials, appearing in a series called *OUTREACH*, are approaching 80 in number. The last group deals with "Appropriate Technology " and treats education, water, health, shelter, food and fisheries, solar energy, wind and water energy, biomass energy, stoves, and transportation. Vol. 4, Nos. 1, 2 and 3, 1992, of UNEP's magazine, *Our Planet*, feature "Genetic Diversity," "The State of the Global Environment," "California vs. the Big Smog," respectively. The UN agency's information and referral network, INFOTERRA, has published a report of its situation and activities in its *Bulletin*, No. 6, 1991. Another newsletter of UNEP's Industry and Environment Programme Activity Center is titled *Ozone Action* and reports ongoing impacts and protective measures involving the threatened ozone layer. It appears in English, French, Spanish, Chinese and Arabic. For all but the last item, write : Publications Section, UNEP, P.O. Box 30552, Nairobi, Kenya. For *Ozone Action*, write : UNEP IE/PAC, Tour Mirabeau, 39-43 quai André Citroën, 75739 Paris Cedex 16, France.

The Regional Office for Europe of **WHO** (World Health Organization) announces the publication of a new periodical, *Environment and Health*, a joint activity of the Environment and Health Department of WHO's regional office and ISIS (International Health Studies and Information). The inaugural issue features, inter alia, "The European Charter on *Environment and Health*" and "Taking Stock of Europe's Health." For regular receipt free of charge of the new periodical, write : Editor, Environment and Health, WHO Regional Office for Europe, 8 Scherfigsvej, 2100 Copenhagen, Denmark. ◆ Issue No. 3, 1992, of *Environmental Bulletin*, published by the **World Bank** Environment Department, contains a report on the World (Bank) Development Report of 1992, Development and the Environment, which urges integration of environmental considerations into development policy making and declares that, with more than a billion people still living on 1 US$ a day or less, "the achievement of sustained and equitable development remains the greatest challenge facing the human race." The bulletin can be had free by writing to : Environment Department, World Bank, Room S-5029, 1818 H Street, N.W., Washington D.C. 20433, U.S.A. The World Development Report can be purchased from the World Bank's Publications Department, P.O. Box 7247-8619, Philadelphia, PA 19170-8619, U.S.A.

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Biodiversity:

An increasingly important theme in environmental education

During the next 20 to 30 years, the world could lose more than a million species of plants and animals - primarily because of environmental changes due to humans. At 100 species per day, this extinction rate will be more than 1,000 times the estimated "normal" rate of extinction. The list of lost, endangered and threatened species includes both plants and animals. About 10% of temperate region plant species and 11% of the world's 9,000 bird species are at some risk of extinction. In the tropics, the destruction of forests threatens 130,000 species which live nowhere else.

This alarming rate of extinction is the global problem which has kindled world-wide interest in "biological diversity" or "biodiversity". Biodiversity implies more than simply the number of species that inhabit our planet. The ecological interactions among these diverse species and the physical environment make up the ecosystems upon which the human species depends for survival. *Biodiversity* also covers the genetic variability of life on the planet. **Without genetic variability, life loses its ability to survive change - a quality known as adaptation.**

Loss of biodiversity is the problem; **conservation biology** is the science to understand the problem and propose solutions. ***Environmental education*** **is the means of getting solutions implemented.**

Defining/Observing Biodiversity

Biological diversity usually refers to three levels of variability of life: different types of ecosystems (plant and animal communities in a given environmental unit), different species and, the diversity of genetic make-up both within and among species. The planet's biodiversity is important to human beings in many ways. For example, it provides a potential resource for food, medicine and industrial material.

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Biodiversity also provides vital services such as renewing the earth's atmosphere, absorbing pollution and maintaining soil fertility. It also provides ethical and spiritual inspiration for many societies.

Ultimately, the three levels of biodiversity are the factors underlying successful adaptation to a changing environment. As human beings decrease this biodiversity, they decrease the ability of life on the planet to adapt to changes. **While most animal and plant species adapt to environmental changes primarily by slow genetic changes in physiological, structural or instinctive characteristics, humans prevail as the species which essentially adapts by learning. We are capable – at least by design, if not in practice – of tremendous adaptive changes in our behaviour in the short time span of one generation. The process by which this adaptive behaviour spreads among human populations is *education*.**

Many difficult questions arise in relation to the distribution and use of the planet's biodiversity resources.

Developed countries, which are relatively poorer in biodiversity, have gained their current quality of life at the expense of their biodiversity and in most cases also at the expense of the biodiversity of developing countries. Should those countries which have not yet developed their biodiversity resources stop this form of development even though it impairs their longer term economic development? How should the cost of preserving biodiversity for the globe be shared between the rich and the poor countries?

In fact, *if efforts to conserve biodiversity – local, regional, national and/or international – are to be successful, they must have the support of the citizens of the world.* We must learn alternative ways of using the environment which will allow us to attain an acceptable quality of life. Decision makers at all levels must be aware of the need for and capable of finding management alternatives to implement sound conservation measures.

Species and ecosystems are not uniformly distributed on either the land or in the seas, although some patterns exist.

Ecologists have found that the diversity of terrestrial species increases from the poles to the equator but this pattern is not reflected for marine biodiversity.

Tropical rain forests, which blanket much of the lowland tropics, cover about 7% of the earth's surface, and may contain half of all terrestrial species on earth. *But a cautionary note is needed here.* **When discussing biodiversity and its importance, there is a tendency to dwell heavily on the tropical rain forests.** Tropical rain forests are the most diverse terrestrial ecosystems and are sometimes considered to be the most threatened. **However,** the conservation of biodiversity in less species-rich ecosystems is equally critical.

The various foods, medicines, energy sources and industrial products used by humans have come from virtually every *ecosystem* from every corner of the earth. Many sources of such products have not yet been utilized to their full potential. The loss of these future resources would affect our quality of life, and in some cases, human survival.

It is estimated that more than 25% of all medicines available today are derived from tropical plants. Four-fifths of the human population in developing countries rely on traditional medicines, many of which are derived from tropical plants. Over 40% of all pharmaceuticals available in the U.S.A. depend on natural sources.

Presently, approximately 80% of the world food supply is provided by fewer than two dozen species of plants and animals. In the process of depending upon such a few number of species we are also: (1) narrowing the genetic diversity of crops that we depend upon, (2) changing diverse natural areas into monocultures, (3) reducing the numbers of actual and potential ancestors of crops and domestic animals which may provide genetic diversity to develop new strains or races, and (4) undermining the food security for a growing population.

Most of the agricultural crops currently being cultivated have been selected for a particular geographic area. These cultivars may not be as productive or even viable if the climate changes and if new pests or diseases evolve. **This makes even more pronounced the need to preserve genetic diversity needed to find food species which can adapt to new conditions.**

Infusing Biodiversity in the Curriculum through Environmental Education

While biodiversity is basically an ecological topic, *biodiversity problems and issues* are connected to every fabric of our global society. We must draw upon sociology, psychology, communications, economics, geography, history and many other disciplines in order to develop and implement solutions to these complex problems. Our educational system should prepare world citizens to cope with biodiversity – and other environmental – issues by *infusing* the topic appropriately throughout these disciplines in the curriculum. Students whose only exposure to biodiversity problems is a short unit on ecology in their biology classes may be poorly equipped to understand and respond to biodiversity problems.

Our goal must be to ensure that these students are making *informed* choices which evaluate *all* known consequences against *clearly identified values* and with the *best information available*.

Teaching activities in environmental education about biodiversity can be conducted in various manners and under various heads like sciences, social sciences, visual arts, languages, geography, history etc. An activity may be conceived under each head separately or under several heads at a time.

For example, a biodiversity problem could be presented to students in the form of a moral dilemma, thus linking it with the social sciences. The teacher's role would

be to present the problem and explain the dilemma to the students who individually, in small groups and all together would react through individual reasoning, group discussions and evaluation. The teacher would encourage students to experience personal conflict in the dilemma and to facilitate discussions which allow students to apply and evaluate their own levels of reasoning. At the close of the activity the teacher could amplify the particular problem used and link it with other, wider issues.

Other biodiversity problems could be presented to students based on observation of their environment involving the use of their language and artistic skills as well as science knowledge.

Such activities have a major role to play in the attainment of the 4 basic goal levels of environmental education – 1) Ecological foundation 2) Conceptual awareness 3) Investigation and Evaluation 4) Issue resolution. This would prepare students to develop effective solutions to environmental problems and then take actions necessary for the implementation of these solutions.

Conclusions

Proper management of biodiversity is more than an aesthetic desire, it is a life-supporting need. It may or may not be seen as a moral obligation to our environment, but it is most certainly a moral obligation to ourselves and to future generations. Effective, optimal management of biodiversity will require appropriate individual and collective behaviour of world citizens. The means to achieve that behaviour is environmental education.

Changing human behaviour, however, is not a simple "technological fix". There must also be adjustments to knowledge and value priorities, i.e. attitudes. Without these adjustments, at best, new technologies will not be adopted, or worse, technology will add to the existing problems. Obviously, there are many tasks for us as environmental educators to complete.

Not everyone in the world, however, can afford to value the environment and needs of future generations so highly. It will be difficult to develop positive attitudes and conserving behaviour towards our natural environment among many poverty-stricken citizens of developing nations. Without food for survival, there is little need to conserve the environment for future generations. It is not surprising that many people of the world who are barely able – or unable – to provide those basic physical needs for themselves are unconcerned about actions that benefit environmental quality. The motivations provided by poverty, starvation and ill health cannot be changed merely by education about environmental quality.

However, environmental education can help some of these citizens enhance their survival and the status of biodiversity by presenting them with more compatible options.

The goals of environmental education must be infused effectively into our world's educational systems. Intelligently weighing the environmental consequences of personal, social, institutional, economic and all other decisions must become second nature to our world population.

(The ideas developed above are based entirely on the draft **Environmental Education Module on Biological Diversity for Secondary Education)**

The Follow-up to UNCED

The Director-General of UNESCO expressed at UNCED his intention to make environment and development the central focus of his mandate, to maintain the momentum created by UNCED, and to guide the United Nations system to live up to the challenge before it.

Agenda 21 is a daunting programme of what is needed to achieve sustainable development. The following is a brief analysis of which recommendations for action included in Agenda 21 are addressed to UNESCO or to which action areas the Organization would be expected to make a contribution.

For three important action areas included in Agenda 21 governments have expressed their expectation that UNESCO would take the lead in implementing the respective programmes at the international level. These areas are (not in any order of priority): (1) promoting education, public awareness and training (Chapter 36); (2) Critical scientific uncertainties related to the global oceans and regional seas, marine environmental protection, and islands (Chapter 17); and (3) **In situ conservation of and research on biological diversity** (Chapter 15). As regards education, governments have supported in particular the joint UNESCO/UNEP International Environmental Education Programme (IEEP).

A **Biodiversity convention** was signed in Rio. However, key scientific questions remain, such as: Do we need all those species for the functioning of the biosphere? What is the role of biodiversity in ecosystem functioning, and therefore sustainability? What are the origins of biodiversity and how is biodiversity lost? Where and how quickly are we losing biodiversity?

UNESCO's role and niche is to mobilize the scientific community to provide answers to such questions. In this way, UNESCO will be a key player in providing scientific underpinning for the Biodiversity Convention, and in helping countries understand and conserve biodiversity.

UNESCO also has a role in further developing "biosphere reserves" as a unique multi-functional tool for enhancing *in situ* conservation of biological diversity.

The proposed strategy will be to work primarily through a joint initiative ("Diversitas") of the International Union of Biological Sciences (IUBS), the Scientific Committee on Problems of the Environment (SCOPE) and UNESCO. Diversitas seeks to identify scientific issues and to promote research on three themes: the ecosystem function of biodiversity, the origins, maintenance and loss of biodiversity, and the inventorying and monitoring of biodiversity. UNESCO's principal responsibility within the collaborative programme lies in the third theme, and the estimation of the number of species and their distribution.

The work covers diversity in marine, coastal, freshwater and terrestrial environments and in terms of all living things, from whales to microbes. Work on the relationships between cultural diversity and biological diversi-

ty could also be developed (e.g. in terms of ethnobotany, traditional ecological knowledge). The project thus involves several programmes and units within the Secretariat. The actual sites for study will be chosen from a selected number of biosphere reserves within the UNESCO network and of marine sites.

Regional training seminar on environmental education in the context of the Chernobyl Accident

A regional training seminar on environmental education in the context of the Chernobyl accident, was organized by the Ministry for Environmental Protection of Ukraine and the National Commission of Ukraine for UNESCO in collaboration with the UNESCO-UNEP International Environmental Education Programme (IEEP) in Kiev from 13 - 19 December 1992. It was attended by participants from 13 countries - Azerbaijan, Belarus, Canada, Czechoslovakia, France, Hungary, Mexico, Netherlands, the Russian Federation, Switzerland, U.K., Ukraine and U.S.A., as well as a number of observers.

The main objective of the seminar was to study the environmental education needs of post-Chernobyl Ukraine as well as the measures taken in this direction, though a number of environmental education aims, principles and strategies stemming from Agenda 21 as well as the conclusions and recommendations of the ECO-ED conference held in Toronto, Canada, from 16 - 21 October 1992, were also discussed.

A number of relevant presentations were made by delegates from diverse countries like Canada, Czechoslovakia, France, Ukraine, the Russian Federation, and U.S.A., and working groups were formed to deal with the following topics:

- Chernobyl, Environmental Ethics, Awareness of the Noosphere and Environmental Education;
- The Role of Public Organizations and Mass Media in the Enhancement of Environmental Awareness;
- Forms, Methods and Contents of Environmental Education;
- Training Specialists in Ecologically-Sound Urban Development.

Having noted that:

- improvement of the environment is one of the most important conditions for a nation's survival;
- a scientifically based and educationally formed return to the initial principle of harmony between man and nature is necessary;
- lack of competence and ecological culture on the part of specialists and the population as a whole, had a considerable role to play in what led to the Chernobyl tragedy;
- environmental education in post-Chernobyl Ukraine is exploring in two directions: formation of a world ecological outlook as well as the ability to make practical, positive and competent decisions on the environment;

a list was drawn up of the most pressing needs of Ukraine in the matter of environmental education, the most notable being:

- access to the latest information on environmental education at all levels, as well as technical and technological teaching/learning programmes;
- development of programmes and materials of all levels for all types of educational institutions, based on worldwide experience;
- mutual exchange of educators of all levels, specialists in curriculum and programme developments, and students of all levels;
- assistance in providing educational establishments with modern teaching and training materials and equipment;
- creation of a continuous system of ecological education in Ukraine in the context of the Chernobyl accident by experts from international organizations and the world's leading educational institutions;
- creation of a network of International Educational Methodological Centres in Kiev and other Ukrainian cities on environmental education problems of countries having suffered from the Chernobyl Accident;
- establishment of a National Council on Environmental Education with the participation of governmental and non-governmental organizations to elaborate and implement a National Environmental Education Strategy;
- organization of an international competition of mass media, world publishing houses on the subject of Chernobyl and the coming generation.

Workshop to develop strategies for integrating environmental education into teacher education programme in Nigeria

The Nigerian Educational Research and Development Council (NERDC), in collaboration with UNESCO, organized a four-day national workshop to fashion out strategies on integrating environmental education (EE) into teacher training programmes in Nigeria, in Lagos from 13-17 January 1992.

The major tasks of the workshop were to:

– appraise the Nigerian physical environment with its continuous state of degradation as exemplified by land and soil degradation; air and water pollution; deforestation and desertification; loss of biological and wildlife species and reduced biodiversity; coastal and land erosion; resource depletion and population pressure (estimated at 113 million in 1991 and having doubled since 1963);

– appraise the existing teacher education curriculum vis-a-vis its environmental education components ;

– develop a model curriculum for in-service and pre-service teacher training programmes ;

– establish strategies for the development of relevant teaching and learning materials for EE ;

– develop techniques for systematic evaluation of curricula and educational materials for EE; and

– formulate awareness strategies for administrators and policy-makers.

The workshop *noted* the efforts of government and non-governmental organisations in EE and Environment related issues. In particular, the workshop noticed with satisfaction the following:

– The establishment of a Federal Environmental Protection Agency (FEPA) to, among other things, formulate policies, regulate and enforce environmental standards, and carry out environmental impact studies to guide the siting of industries and other national establishments;

– The adoption of the National Conservation Education Strategy (NCES) to which Environmental Education components have been added in the Citizenship Education Programme for use in Primary and Secondary Schools in the country

The workshop was also determined to make the following recommendations;

– The Federal and State Ministries of Education should establish Conservation Clubs in all primary and secondary schools to deal with local environmental problems and to organise periodically, with the EE Coordinating Committee of NERDC, orientation seminars and workshops for school teachers;

– The Federal Environmental Protection Agency (FEPA) should intensify its efforts to ensure that industries that are yet to establish Environmental Monitoring Units do so without further delay and that NERDC, under sponsorship of FEPA, should package environmental audit manuals for selected industries ;

– When the much-called-for National Education Fund to be contributed to by Governments, Industries, Organisations and Individuals is established, 10% of the fund should be specifically earmarked for environmental education activities;

– Environmental Education should be *infused* into all subjects of Teacher Education Programmes.

Sub-regional training workshop on developing national strategies and action plans on environmental education in Africa

Delegates from 6 countries - Benin, Gambia, Ghana, Sierra Leone, Togo and the host country Nigeria attended the sub-regional training workshop for developing national strategies and action plans on EE in Africa held from 17-22 February 1992 in Lagos and organized by The Nigerian Educational Research and Development Council (NERDC) in collaboration with UNESCO-UNEP International Environmental Education Programme (IEEP).

Summary of country reports

The country reports revealed that the countries of the region had embarked on Environmental Education, though to varying degrees. The highlights are as follows:

– Togo

Environmental Education was reported as a new subject in Togo. Nevertheless, the Togolese Government had taken steps to create public awareness of the issues and problems of environmental degradation and had introduced experimental EE programmes at Primary, Junior and Senior Secondary Levels.

– The Republic of Benin

There was no EE at any level except as elements of the Population Education, Family Life Education and Sex Education Programmes. Advice was sought on how to integrate EE into the school system without the demand for extra lesson periods and more remuneration for teachers. Nevertheless, a five-year action plan was being developed and the establishment of local, state and national committees, associations and non-governmental organizations on EE was being considered.

- Gambia

EE was reported to be part of the Social Studies, Science and Population Education curricula at Primary and Secondary levels. The Sahel Education programme (SEP) for the protection of the environment was being vigorously pursued. A Training Information Programme on Environment (TIPE) based on drought and desertification control in the Sahel region was being organized. A Gambian Environmental Action Plan (GEAP) had been developed.

- Ghana

The country paper from Ghana indicated strong EE inputs at the Basic and Secondary levels, with provisions for non-formal exposures for the whole country. Agriculture teachers were cited as having significant res-

ponsibility for EE dissemination. The shortcomings of EE implementation in Ghana were identified generally, as lack of qualified teachers for EE and the emphasis on environmental studies as opposed to environmental education.

- Sierra Leone

Environmental Education components had been introduced at all levels of the education system, with deficiencies in areas concerning global environmental issues. The University of Sierra Leone had established a Faculty of Environmental Science which is expected to deal with EE.

- Nigeria

The Nigerian paper described the state of the Nigerian environment and the need for EE was presented along with guidelines for integrating EE into teacher education curriculum. Strategies for implementing EE within all levels of the educational system were given.

Furthermore, the paper provided the outline Strategies and Action Plan for Environmental Education which the Sub-Regional Workshops could consider, taking into account the discussions of the workshop and the experiences of the participating member states.

(the above is based on the final report of the workshop)

Environmental education gains ground in a network of Slovenian Elementary schools

From 1990, Slovenia embarked upon an environmental education project for 8 Elementary schools in and around the capital, Ljubljana.

Monthly meetings were the means of contact among these schools, together with a 3-day residential workshop each semester. The school year 1990-1991 was regarded as a "pilot phase", the following being one of "real" action research.

A great variety of projects emerged from individual schools like planting trees around the schools and in the neighbourhood; investigating everyday life in the past in order to create a vision of the future to compare the quality of life; a project in literature, music, drama, economy, biology; the effects of the thermoelectric plant on the nearby environment; etc.

Basic questions like the creation of a network of teachers and schools to foster exchange of experience, devising a system of work with teachers so as not to enforce ready-made solutions on them, helping teachers to gain the necessary know-how were dealt with in the 3-day workshops whose aims were to develop a spirit of cooperation within the network of 8 schools; familiarise teachers with action research methodology and philosophy; try out experiential methods of work with pupils; clarify some basic concepts of the environment and environmental education; and presenting each individual teacher's experience for a collective evaluation.

Much effort was invested in planning and evaluating these workshops and some of the aims were realised but at the same time certain dilemmas emerged like the importance of action as against reflection, of practice as against theory; whether the first cycle of research should be completed with the schools and teachers involved from the start or whether networking with other schools should be initiated nonetheless etc.

Meanwhile public recognition has already been achieved to some extent as testifies the intention of the Lord Mayor of Ljubljana to invite representatives of the teachers, pupils and parents from cooperating schools to a reception at the Town Hall in order to thank them in the name of the city and to offer help from the town's communal service.

EE News and Publications

In a joint meeting of UNEP and the International Chamber of Commerce (ICC) government ministers and industry representatives from 24 countries have agreed to set up an international panel to review industry's progress towards sustainable development through the implementation of the Business Charter for Sustainable Development launched by the ICC in 1991.

For more information on the panel, write: IE/PAC, or ICC, 38 Cours Albert 1er, 75008 Paris, France, +33 (1) 49 53 28 28. ICC can also provide information on the Business Charter for Sustainable Development.

A conference on the Social Dimensions of Environment and Sustainable Development, organized by the United Nations Research Institute for Social Development (UNRISD) and the Foundation for International Studies of the University of Malta was held in Valetta, Malta from 22-25 April 1992. The conference responded to the concern that important social issues associated with environmental degradation and conservation have not been sufficiently addressed in the build-up to the June 1992 Rio Declaration on the Environment and Development.

For a copy of the conference summary, write: The

Reference Centre, UNRISD, Palais des Nations, 1211 Geneva 10, Switzerland.

In January 1992 the USA announced a programme of environmental co-operation between the United States and Asia. The US-Asia Environmental Partnership (USAEP) is designed to boost technology transfer, training and investment in Asia, benefiting the region's environment. Two of the components of the programme are to provide environmental fellowships and training involving business and educational exchanges to study environmental problems and develop solutions and finally a regional biodiversity conservation network designed to help conserve genetic diversity in Asia's forests and seas.

For more information, write: Willy Tjen (Programme Director for Asia Business Relations) or Peter Gourlay (Manager for Technical Co-operation), USAEP, 1133 20th St NW, suite 300, Washington DC 20036, USA, tel:+1 (202) 835 0333.

The Global Environmental Management Initiative (GEMI), founded in 1990, is a U.S. group of about 200 chief executives, most of whom represent multinationals. It includes AT&T, Union Carbide, IBM and Procter & Gamble. Its aim is to provide a worldwide exchange of information on cutting-edge environmental management techniques.

For more information contact: GEMI, 1828 L St., NW, Ste. 711, Washington, DC, 20036, United States. phone: (202) 296 74 49.

An **Environment and Development Kit** consisting of 38 colour overhead transparencies and a 38-page Resource Guide with an introduction by Dr. Gro Harlem Brundtland was developed in Norway. The kit covers seven topics: oceans, desertification and soil erosion, rainforests, the greenhouse effect, the ozone layer, the debt problem and the arms race. The Resource Guide provides one lesson plan for each topic. Each transparency has a side panel of text (approx. 160 words) providing additional information.

Language: English, Norwegian. **Level:** high school, college/university and adult.

Available from: Visuell Inform A.S., Ryensvingen 7, N-0680 Oslo 6, Norway, Tel: 02 67 88 00, Fax: 02 67 93 51; Visuell Inform c/o AL & LS (8th floor), 545 West 45th Street, New York, NY 10036, U.S.A.; Natural Heritage Inc., P.O. Box 95, Station O, Toronto, Ontario M4A 2M8, Canada.

Cost US$115.00 plus postage to your location. Weight: 1 pound 9.3 ounces.

The European Community's executive agency, the European Commission published an Environmental Action Programme (EAP) on March 18, 1992.

Towards Sustainable Development the European Commission 5th, Environmental Action Programme (Ref. COM(92)23 Final).

Available from Office for Official Publications, 2 rue Mercier, L-2985 Luxembourg, +352 499 281. Also available from European Commission offices in Member States.

The World Resources Institute has released **Population Growth, Poverty, and Environment Stress: Frontier Migration in the Philipines and Costa Rica,** written by Maria Concepcion Cruz, Carrie A. Meyer, Roberto Repetto and Richard Woodward (may be ordered from WRI Publications/ P.O. Box 4852/ Hampden Station/ Baltimore, MD/ 21211/ 410-516-6963, or dial toll free: 1-800-822-054.)

Recently received the June 1992 issue of the English edition of **China Environment News,** the only national newspaper specialized in environmental issues in China and the world. **Write to: China Environment News,** 15 (A) Xiaoxinglongjie, Chongwen District, Beijing 100062. Tel: 752478 Fax: 7013772 Telex 222359 NEPA CN.

Ecological literacy: Education and the Transition to a Postmodern World, by David W. Orr is a 210 page volume on **sustainability, its meanings and its applications on education.** It is published by the State University of New York Press, State University Plaza Albany, New York 12246, U.S.A.

Environmental Education Activities for Primary Schools, suggestions for making and using low cost equipment, a new publication in the EE Series is now available in English. The emphasis of this guide is on the construction and use of low cost equipment which will help the student's understanding and encourage his problem-solving approach in classroom and outdoor activities.

Available from: *Environmental Education Unit, UNESCO* (address on last page)

The Victorian Environmental Education Council (VEEC) has just published **Learning to Care for our Environment: Victoria's Environmental Education Strategy.** This strategy has received recognition nationally and internationally and is part of a programme to implement the world strategy for Sustainable Living developed jointly by the World Conservation Union (IUCN), United Nations Environment Programme and World Wide Fund for Nature.

Available from: Victorian Environmental Education Council, Level 23 Rialto South Tower, 525 Collins St., Melbourne 3000 Victoria Australia. Phone: (03) 628 2703; Fax: (03) 628 3448.

BEST COPY AVAILABLE

Children's Edition of Agenda 21

Given the importance of Agenda 21, widely claimed to be "the most important document of the decade", Peace Child International has formulated the following request for help from students all over the world:

REQUEST FOR HELP

to create a

CHILDREN'S EDITION OF AGENDA 21

UNESCO is supporting Peace Child International in the development of a **Children's Edition of Agenda 21** – one we all can understand. It will have pictures in it; stories, interviews with environmentalists, comments from politicians, background from UN experts. UNICEF is helping us; so are other UN departments. But we all agree the ones who can help the most are you – teachers and students! We want you to write it for us: if you understand it there's a chance your peers (and adults) around the world will too.

An International Network: The UN wants to be sure that we get perspectives from both rich and poor parts of the world. So we are contacting schools in 140 countries, setting up a computer network and phone tree, writing a special teacher guide, hiring student interns as editors, translators etc. It's a massive task! **Your part** will be to take 10-20 pages of the Agenda (e.g. the chapter on Forests) and make a 1-2 page summary of it. (Do this by the end of April). We shall then circulate the summaries to all participants and invite you to try to find examples in your area of the things the Agenda is talking about (e.g. you may not have made the summary of the chapter on Toxic Waste, but might have a perfect example of the problem in your area.) Get your examples to us - with photos etc. by July 1st, 1993. A small group of students and experts will gather for an Editorial Meeting in England in July. The Book is planned to go on sale in September.

– and this is only Part One! Once we have the Children's Edition we shall begin the fascinating job of checking whether in fact our governments are doing what they promised - and whether Agenda 21 promises enough! We shall invite children to begin to develop their own Agenda. Exhibitions of paintings, television programmes, and a Children's Conference on Agenda 21 are planned. You can be part of all this.

Interested? You ought to be! It's your future they are planning. If you'd like your school, society or club to be involved, to obtain a participant pack please contact as soon as possible David Woollcombe, President, Peace Child International, Little Maltings, Maltings Lane, Much Hadham, Herts SG10 6AW, U.K.

Save trees.

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